

A GUIDE
TO THE
NATURAL HISTORY
OF THE
ISLE OF WIGHT

With the editor's
compliments & thanks.

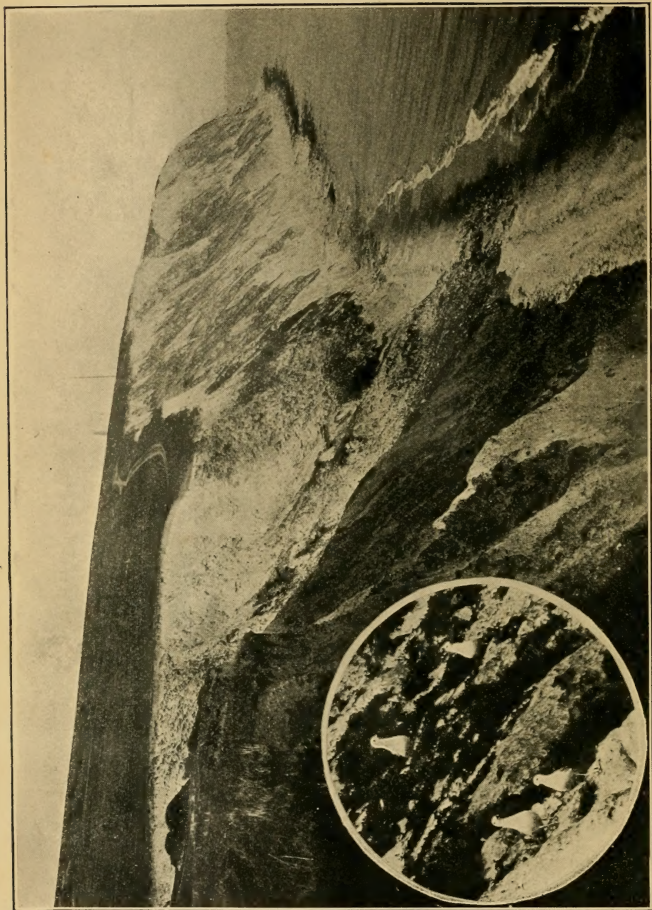
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H. F. Poole, photo. THE CULVER CLIFFS: INSET SHOWING HERRING GULLS AT THEIR NESTS. *Frontispiece.*

A GUIDE TO
THE NATURAL HISTORY
OF THE
ISLE OF WIGHT.

A series of contributions by specialists relating to
the various branches of Natural History and
kindred subjects.

EDITED BY FRANK MOREY, F.L.S.

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CONTENTS.

	<i>Page</i>
LIST OF ILLUSTRATIONS	v
DESCRIPTION OF THE TWO PLATES ILLUSTRATING MR. R. W. POULTON'S ARTICLE ON PALAEOLITHIC IMPLEMENTS ...	vii
INTRODUCTION	ix
AN OUTLINE OF THE GEOLOGY	1
EARTHQUAKES	35
AN ACCOUNT OF DISCOVERIES OF PALAEOLITHIC IMPLEMENTS	37
FUNGI	42
FRESHWATER ALGAE	65
MARINE ALGAE	73
LICHENS	89
HEPATICS	103
MOSSES	108
FLOWERING PLANTS AND FERNS	126
PROTOZOA (INTRODUCTORY)	200
RHIZOPODA AND HELIOZOA	201
FORAMINIFERA	203
INFUSORIA	204
PORIFERA (SPONGES)	214
COELENTERATA	215
ECHINODERMATA... ..	220
WORMS AND THEIR ALLIES	223
ROTIFERA	225
POLYCHAETA	233
POLYZOA	235
MOLLUSCA	240
ARACHNIDA	270
CRUSTACEA	282
MYRIAPODA	290
INSECTS (INTRODUCTORY)	292
ORTHOPTERA	294
NEUROPTERA	298

	<i>Page</i>
HYMENOPTERA 	302
COLEOPTERA	322
COLEOPTERA (SUPPLEMENTARY LIST)	387
LEPIDOPTERA 	394
DIPTERA 	439
HEMIPTERA	452
TUNICATA 	474
FISHES 	476
AMPHIBIANS 	492
REPTILES 	494
BIRDS 	497
MAMMALS 	529
SUMMARY 	540
METEOROLOGY (TOTLAND) 	542
METEOROLOGY (VENTNOR)	556
METEOROLOGY (GENERAL) 	558

LIST OF ILLUSTRATIONS.

THE CULVER CLIFFS	...	...	...	<i>Frontispiece</i>	<i>Page</i>
CLIFF SECTION—AFTON DOWN TO SEDMORE POINT	...	...	...	...	9
” ” —WHITECLIFF TO THE FORELAND	...	...	...	...	17
” ” —HAMSTEAD	...	...	...	...	25
” ” —HEADON HILL AND ALUM BAY	...	...	...	...	29
PALAEOLITHIC FLINT IMPLEMENTS, plate I	...	...	...	...	40
” ” ” ” ” II	...	...	...	...	40A
HENBANE, WITH CAPTURED FLIES	...	...	...	...	164
WOOD CALAMINT	...	...	...	...	168
MARSH HELLEBORINE	...	...	...	...	184
SQUID (LOLIGO FORBESI)	...	...	...	...	266
SEA SLUGS (ANCULA CRISTATA)	...	...	...	...	268
LARVAE OF GLANVILLE FRITILLARY	...	...	...	...	396
GLANVILLE FRITILLARIES ON KIDNEY VETCH	...	...	...	...	398
A LUMP-SUCKER	...	...	...	...	480
COMMON GRASS SNAKE	...	...	...	...	492
LIZARDS AND EGG	...	...	...	...	494
SLOW-WORM	...	...	...	...	496
ADDER PREPARING TO STRIKE	...	...	...	...	496
NEST OF ROBIN CONTAINING CUCKOO'S EGGS	...	...	...	...	500
YOUNG CUCKOO	...	...	...	...	510
ROUGH-LEGGED BUZZARD STRIKING LEVERET	...	...	...	...	512
PEREGRINE STOOPING ON A PHEASANT	...	...	...	...	514
WHITE STORK	...	...	...	...	516
NEST AND EGGS OF WILD DUCK	...	...	...	...	518
NESTS AND EGGS OF HERRING GULLS	...	...	...	...	524
YOUNG SEROTINE BAT	...	...	...	...	530
VARIETIES OF THE COMMON MOLE	...	...	...	...	532
THE LAST OF THE ISLAND BADGERS	...	...	...	...	534
DORMOUSE AND NEST	...	...	...	...	536
WHITE-SIDED DOLPHIN	...	...	...	...	538
MAP OF THE ISLAND	...	...	...	...	560

DESCRIPTION OF THE TWO PLATES ILLUSTRATING MR. R. W. POULTON'S ARTICLE ON PALAEOLITHIC IMPLEMENTS.

PLATE I.

1.—The largest implement found in this locality— $7\frac{1}{4}$ inches. It is ovate in form, and the side shown is rather flatter and more finely worked than the other. It is brown in colour, and, though slightly worn, is of very fine workmanship and regular form.

2.—An implement of the “perch-backed” form, one edge being much less curved than the other. It is coloured white, and its surface is much worn.

3.—A fine specimen of the “ovate-lanceolate” or “almond-shaped” form of implement. It is short, and beautifully symmetrical, and its angles are sharp. The butt end is somewhat blunt.

PLATE II.

1.—Perhaps the finest implement found in this locality. Its edge is beautifully curved, and its surface finely chipped. In colour it is white, with a trace of blue on one side. It is ovate in form, quite unworn, and has apparently been slightly broken at its narrow end.

2.—A most beautifully worked implement. In form a perfect oval: the side opposite to the one shown in the plate is flatter and more finely worked. In edge of slightly narrower end there is a beak or cavity, worn by use in scraping. It is white and slightly ochreous. The chipping round the edge is very delicate, and it is absolutely unworn.

3.—An example of what have been called in this paper “triangular implements.” The notches in the sides can be plainly seen. The plain edge in this example is somewhat blunt, while the whole implement has been manufactured from a large flat flake.

4.—Another example of this form. Here a large amount of chipping has been necessary to get the flint into the proper shape. The two notches in the sides can be seen, and the plain edge in this case is sharpened. The notches show fewer signs of wear than in the specimen above.

CORRIGENDA.

- Page 58—bottom line: for "Shankin" write "Shanklin."
,, 60—8th line: for "Dowx" write "Down."
,, 109—7th line from bottom: for "carbonic" write "carbon."
,, 118—21st line: for "Weissia" write "Weisia."
,, 151—19th line: for "Emsworth" write "Elmsworth."
,, 173—12th line from bottom: for "See" write "Sea."
,, 218—3rd ,, : for "**Alba**" write "**alba**."
,, ,, —2nd ,, : substitute a comma for the
hyphen between *cereus* and *alabastrina*.
,, 220—9th line from bottom: for "at" write "of."
,, 228—15th ,, : after "this year" add "1908."
,, 252—21st ,, : for "**aricularia**" write "**auricu-**
laria."
,, 287—17th line from bottom: for "occuring" write "occurring."
,, 303—top line: for "1897" write "1907."
,, 329—3rd line from bottom: for "Sandown" write "King's
Quay."
,, 335—15th line: for "Champion" write "Newbery."
,, 339—20th line: after "beach" write "Sandown."
,, 375—top line: for "*acetocella*" write "*acetosella*."
,, 393—16th line: for "*Liniaria*" write "*Linaria*."
,, 394—10th line from bottom: for "964" write "972."
,, 531—7th line: for "chaffer" write "chafer."
,, 560A—The date at the top of the map should be altered to
1909.

INTRODUCTION.

“ Happy is he who lives to understand,
Not human nature only, but explores
All natures,—to the end that he may find
The law that governs each ; and where begins
The union, the partition where, that makes
Kind and degree, among all visible beings ;
The constitutions, powers, and faculties
Which they inherit—cannot step beyond—
And cannot fall beneath ; that do assign
To every class its station and its office,
Through all the mighty commonwealth of things ;
Up from the creeping plant to sovereign Man.”

Wordsworth.

MORE than forty years ago, when a very small boy indeed, the idea came to me that it would be an excellent plan to write a list of all the animals that existed in the World. Having made known my intention to do this, a disused ledger, containing a few blank pages, was given me for the purpose, and I solemnly sat down with full intent to carry my project into effect. Things went very well for a time, and I was getting together a respectable list: elephant, lion, tiger, bear, crocodile, deer, antelope—but here a difficulty arose. My sister, who was older than I, told me she was quite sure there was more than one kind of deer, and she thought there was more than one sort of antelope, and that such general names as these were too indefinite to be of much use. This was disconcerting, but I might have recovered from the shock had not I received another blow immediately after—I was told that a *bat* was not a *bird* but some sort of *animal*! Now for a comparatively large creature which had wings, and flew about and caught moths and beetles, not to be a *bird* seemed to me to be unreasonable and altogether anomalous, and I felt so annoyed at this discovery that

I decided to postpone my project until I knew more about Natural History.

Some twenty years rolled by, and having during this period devoted a good bit of my leisure to the study of Entomology and kindred subjects, the idea which I entertained as a child, and which had lain dormant in my mind in a modified form ever since, manifested itself in an attempt to form some lists of the species constituting our local fauna. These were very imperfect, but they formed at least a nucleus for future and more definite work.

During these two decades, and in the twenty years which followed, I employed much of my leisure—which for several years was very scanty indeed—in the amassing of collections of local Natural History objects, including between 2000 and 3000 species of insects, shells, and plants, with, in most cases, data as to habitats and localities. The records in the lists of species of the various groups of organisms dealt with in the following pages will show that these collections have been of considerable service in their compilation.

During the forty years which have elapsed since I sat down as a child with such confidence to an impossible task, I have learned, amongst other things—humility, and when, nearly three years ago, after a consultation with my friend Mr. Frederic Stratton, I decided to attempt to bring out a work which would fairly illustrate the Fauna and Flora and Natural History generally of the Isle of Wight, I did so, almost literally, in fear and trembling, fully realizing the difficult task that I was undertaking.

I knew that success must depend upon the extent to which specialists in the various departments of Nature Study to be treated of would respond to my requests for assistance. I was new to editorial work, and was not in a position to gauge the probable willingness of a number of men who had the necessary information to co-operate with me in an undertaking which would entail much labour, and in which there was absolutely no prospect of pecuniary reward.

My misgivings in this respect, as the result shows, were quite unnecessary. No set of workers in any branch of learning, or in any department of life, could have responded more willingly, and in some cases even enthusiastically, to an appeal for help, than have the gentlemen whose names appear at the heads of the various articles throughout the following pages.

Though Nature Study is becoming popular, is being taught in most of the schools, and is encouraged in high places, many are still without the fold, failing to appreciate or understand the intense interest which those within feel in every living thing, in the stars above and the rocks below. To some extent the true Naturalist is born, not made. Yet every sympathetic mind is capable of appreciating Nature in at least some of her moods: it needs, perhaps, the philosophic mind to appreciate all.

I think one of the most tremendous and impressive facts in the Universe is the effort that Nature makes to maintain equilibrium and repose: on the other hand there is that restless and purposeful energy which keeps everything on the move; there is no standing still. The movements of the heavenly bodies illustrate this; and on our own planet the constant changes in the atmospheric conditions, resulting in storms, are only an effort on the part of Nature to equalize pressure, to restore equilibrium.

Modern research in physics and chemistry also shows us how unstable everything is, for even the primary elements of which all things are composed can no longer be regarded as fixed and permanent. The attempts of the old alchemists to transmute the baser metals into gold were founded upon scientific fact, for modern investigations into the nature and properties of radium have resulted in discoveries scarcely less remarkable than if these old chemists had succeeded in their efforts.

Two things, amongst others, impress me greatly in Nature: the infinite variety which is displayed in objects both animate and inanimate, and the constant change which is taking place in everything around us, whether it be apparent or not. It may I think be safely assumed that no two objects are precisely the same in every respect, and that no single object remains precisely the same for two minutes together. Recent researches into the nature of electricity and the constitution of the atom lead one to believe that this is so.

I have referred especially to inorganic things, but every organism has to justify its fitness to live by a constant struggle with its rivals, and the marvellous thing about it is the delicate adjustment of conflicting interests which seems to have been evolved by the countless generations that have led up to the present scheme of life. As a consequence of this continuous adjustment we find that, speaking generally, each species of animal and plant just holds its own, but no more. It is not often, in recent times, that species become extinct, except through the destroying hand of man—and these cases are but few.

We all know that great changes have taken place in the animal and plant life of the remote past: thousands of species have died out, and thousands more of different form have come on; but if we take a period of, say, 200,000 years, as nearly as we can reckon geological time, we find from the numerous fossil forms that have been collected that nearly all of these are of the same species as exist to-day. So that the interest lies in the fact that all these organisms have held their ground throughout many thousands of generations, and I think we may fairly assume, in most cases, without materially increasing or decreasing in numbers as individuals.

Two concrete examples will illustrate my meaning. Let us suppose that 100,000 years ago thrushes showed a tendency to slightly increase and succeeded in maintaining that increase, with compound

multiplication, to the present time, we should now be simply overrun with thrushes. Yet a very *slight increase* in any species, if persistent throughout many thousands of years, would assume gigantic proportions eventually. If in a given district 10,000 thrushes were able under normal circumstances to find a living, and these on an average had 20,000 young each year, it follows that out of the 30,000 birds 20,000 must perish each year—though naturally fluctuating somewhat—to maintain the average 10,000, and this in spite of the fact that a thrush in confinement may live for several years; but if there should be a persistent tendency to increase or decrease, no matter how slight the difference may be, the aggregate result in a thousand centuries would be most important if not overwhelming. A more striking example is that of certain cryptogamic plants which reproduce their kind by means of a vast number of spores. Some one has calculated that a single “puff-ball” sometimes produces as many as 10,000,000 spores; but if we make a more moderate estimate, and assume that a certain species of puff-ball produces and disseminates, on an average, 1,000,000 spores each season, we arrive at the astonishing fact that only one of that vast number is enabled to germinate, develop, mature, and scatter its spores the next season so as to continue the race—the remaining 999,999 perish! If, on the contrary, we assume it possible that conditions becoming rather more favourable for the growth of puff-balls, two out of each million spores survived, it would naturally follow that these familiar objects would double in number every year, until after a few centuries the whole land would be covered with puff-balls, and there would be room for nothing else.

The influences at work all around us which enable the majority of animals and plants to maintain their numbers unimpaired, year after year and century after century, must be marvellously subtle and worthy in the highest degree of careful study and inquiry. Boundless fields for investigation are open to the Naturalist of the present day—fields which for the most part were undreamed of by the observers of a century ago; and it is partly my object in issuing the present volume to show to the residents of, and visitors to, the Isle of Wight how vast a field there is for study in our very midst.

The number of species of animals and plants living in a state of nature in the Island must run into many thousands, and the various lists in this “Guide” will show that a large number of these have been collected and identified; but much yet remains to be done before we attain to anything approaching a complete knowledge of our local fauna and flora, especially in certain neglected groups. More collecting must be done, and a mass of material must be got together as regards the habits as well as the actual occurrence of the various species, before we can arrive at even a fair knowledge of the Natural History of the district.

Many people who are interested in Nature appear to think that we

are not justified in taking life for the sake of making scientific collections of insects, shells, and similar things, but though I sympathise with these views I cannot agree with them. All of us take life inadvertently, and often unconsciously, in the course of our everyday lives, to an extent that few realize, yet it makes no apparent difference to the numbers that are left—it simply makes room for more. Nature is wondrously prolific, and quickly fills up the gaps that are made in the ranks of her progeny. A collector of insects, too, if he is an all-round entomologist takes a number of species which are predaceous, and which would in the course of their lives have destroyed hundreds of others whose lives are thus spared for a longer time. The entomologist in this case becomes a saviour rather than a destroyer of insects in proportion to the attention he pays to the carnivorous species, and a collection is made without his reducing the number of living insects at all.

An instance of the extent to which we unintentionally destroy life came to my notice a year or two ago, when a large heap of garden refuse which had been accumulating for several months in my garden was about to be burnt. As I was studying beetles at the time, I collected about a bucketful of the most promising of this half-decayed vegetable matter and overhauled it carefully on sheets of paper, picking out the specimens I wanted and letting the others go. I found there were several hundred insects, spiders, woodlice, centipedes, worms, and other small fry in this insignificant quantity of refuse, so that in the whole heap there could scarcely have been less than 30,000 or 40,000, which, excepting the few that might escape, were about to be destroyed in the fire. Now if we are justified in destroying so many lives for the trifling convenience of ridding ourselves expeditiously of a heap of garden refuse, how much more justified should we be in filling our cabinets with a well-selected series of specimens, at our leisure and convenience, which would entail no greater sacrifice of life than did the bonfire, yet would afford material for study for a lifetime, and would be enough to illustrate very fairly the insect fauna of a whole county. The tender-hearted entomologist may console himself with the fact that with such small creatures as insects—"When the worst comes it comes unfeared; one stroke begins and ends their woe."

Possibly some persons on looking through this volume may question the utility of all the lists of species which they will find, with but brief notes as to where they were found and with dates of occurrence, and I admit that to those who have not studied Natural History much these lists will appear somewhat "dry" and uninteresting, but to others who are forming collections of particular groups I anticipate that they will be very acceptable indeed; and, quite apart from the making of collections, one of the chief interests in studying Zoology and Botany in the present day is to trace the distribution of the various species throughout the countries in which

they are found, which can only be done by making these local lists. There is much material for thought in the study of distribution. One is inclined to ask of an animal or plant in any given district, in Charles Kingsley's words, "How did you get here? By what road did you come? What was your last place of abode? And now you are here, how do you get your living? Are you and your children thriving, or growing pauperised and degraded and dying out?" The writers of handbooks on special branches of Natural History, too, depend greatly on such lists for their knowledge as to the distribution and comparative frequency of occurrence of the species of which they treat.

Before passing on to other subjects it may be well to call attention to the consistent beauty which prevails throughout Nature. When it does not appeal to the eye through the aesthetic sense it is usually apparent to the intellect from its fitness of design and adaptation to environment. Some one has said that all living things are the visible expressions of a Master Artist—materialized and animated ideas of a Master Mind. It may seem to some readers superfluous to make these statements, but I do so because I have found from experience that many people who fully realize and appreciate the beauty of a landscape or seascape may be almost blind to the beauty of form and design which exists in a beetle or a fly, or in a lowly flower. To these I would plead to pay more attention to detail in Nature, for these small objects also are the work of the same Master Artist, and are equally worthy of our regard and careful study.

As to the variety of form, as well as beauty of design, that we observe in the animal and plant life which surrounds us, it is simply amazing; and a facetious friend has remarked that the multiplicity of species of organic beings suggests the idea that a beneficent providence has arranged things thus for the gratification of the studious; but perhaps the multiplicity of closely related species, which exercises to the full the critical faculties of the studious to differentiate between them, is less a matter of surprize from an evolutionary point of view than that so many species appear to have no close allies.

It will be noticed that the various sections or chapters into which this "Guide" is divided are on the progressive or ascending scale. We begin with Geology as the basis of all things, and then come two chapters, on Earthquakes and Stone Implements, respectively, which are associated with Geology; after which follows the whole organic series, beginning with Fungi as the simplest group of Cryptogamic plants, and ending with the Flowering plants and Ferns. Then come all the animal groups, starting with the Protozoa and rising to the Mammals, each group throughout the whole series being regarded as a step higher in the scale of development than the one which precedes it—with, perhaps, one or two exceptions. The main groups or classes of Animals follow in the order in which they

are arranged in the "Cambridge Natural History," but in detail the arrangement or classification adopted is in each group that of the various handbooks most approved of by the authors, or in some cases according to the handbook most used by the public. This has entailed, in several cases, a reversal within the group of the ascending order which is adopted for the groups as a whole. The same remark applies to the Botanical section as to the Zoological—the ferns and their allies coming at the end of the Flowering plants instead of at the beginning, and the simpler Fungi after the higher forms instead of before them.

After the Mammals comes a general Summary, in which the totals are given of the species which have been recorded thus far for the Island in every group of the organic series dealt with in the "Guide."

Following the Summary are some Meteorological tables and other information relating to the weather conditions which prevail in the Island, and after these are a few statistics in which it is shown that the superficial area of the I. of W.—small as it is—is sufficiently great to accommodate temporarily the whole population of the World.

It is possible that some readers may criticize what they may regard, not unnaturally, as inconsistencies and irregularities in the method adopted in the book, such as in the spelling of place-names which is not always the same; but it should be remembered that the articles emanate from many pens, and in cases where more than one form of spelling is in vogue for a place, it seemed unfair to alter the form adopted by one writer because it happened to clash with the views of another. For instance, there is Centurion's or St. Urian's Copse at Bembridge, both spellings being used in this work according to the opinions held by the writers as to the origin of the name. There is Hamstead, Hemstead, Hampstead, and Hempstead, all forms being used in recent books and maps, whilst the ancient spelling as given in Domesday Book appears to have been Hamstede. As Hamstead is the form of the word usually adopted by geologists to designate the most recent of the Oligocene formations it may be best to adhere to that spelling. There is also Brixton, Brightstone, and Brighstone—the latter name being most in favour at the present time. Merston, Merstone; Brook, Brooke; Dodnor, Dodner; Bouldnor, Bouldner; are examples of slight variation. In each of these cases I should personally give preference to the name first mentioned. Near Sandown is a wooded district known as Bordwood, Broadwood, or Borthwood—the latter spelling being given on the map which accompanies this volume. Bordewede seems to have been the ancient form of the word. A few other variations, such as Appley and Apley, will be found in the course of the book. The Pan Common referred to several times in the article on birds, and in some of the insect lists, is the place of that name near Sandown and not the Pan Common near Newport.

It is now my pleasing duty to refer to the work of the various gentlemen—and in one case lady—who have helped in a direct way in the bringing out of this Natural History Guide by writing articles and lists of species in the many departments treated of. To those who have helped indirectly by furnishing records, collecting specimens, and in many other ways, I can only say that their work has been invaluable and will ask them to accept my heartiest thanks.

As seemed fitting Geology is dealt with first. Mr. G. W. Colenutt, of Ryde, has written an admirable account of the main geological features of the Island, which can scarcely fail to interest all those whose proclivities tend that way, and I hope others besides. Mr. Colenutt, in addition to acquiring a general knowledge of the structure of the Island, has paid special attention to the Tertiary beds as exposed along the north coast.

A short article follows by Professor Milne on Earthquakes, and it is consoling to hear that we, who live in the Island, have little to fear from these dreaded phenomena. As is well known, Prof. Milne has been a pioneer in the systematic study of seismic disturbances, and has invented apparatus and organized stations for the recording of earthquakes in various parts of the world.

Mr. Ronald W. Poulton gives an interesting account of the discovery of Palaeolithic Implements in the Island recently, and photographic illustrations are given of several of these. Hitherto scarcely any of these older stone implements have been found; and of Neoliths but very few well-worked specimens seem to occur, though at Sandown, Newport, and elsewhere, large numbers of slightly-worked flints may be picked up on ploughed land.

The organic series is commenced by Mr. J. F. Rayner, who writes on the Fungi and gives a considerable list. I feared at one time that I should find no one who would undertake to write a list of this difficult and somewhat neglected group of plants, but fortunately Mr. Rayner came to the rescue and most efficiently filled the gap.

The prospect of gathering any definite information regarding the Freshwater Algae also was most uncertain, but here again willing workers came forward in the person of Mr. G. S. West, the distinguished algologist, who offered to name specimens that might be sent him, and who wrote an introduction to the group, and Mr. S. W. Pring and others who searched the ponds and streams for material, with the result that over 100 species were recorded—including a *Cosmarium* new to Britain.

Respecting the Lichens, another group of plants which has hitherto received but scant attention in the Island, Mr. J. A. Wheldon, of Liverpool, has kindly written a most useful introduction to the class, and the Rev. H. M. Livens—in collaboration with Mr. Wheldon—has compiled a considerable list of species, a large proportion of which are of his own collecting.

I believe no attempt has previously been made to write a list of

our Hepatics or Liverworts, but with the kind assistance of Mr. W. Ingham, who wrote an outline of the group and named specimens sent him, and of Mr. Livens, who collected most of the plants, a short list has been compiled.*

The excellent Moss list, too, with the helpful introductory matter, is the work of my friend, Mr. Livens, to whom I am indebted for much assistance and encouragement throughout what has proved to be a more arduous undertaking than I at first anticipated.

The list of Flowering Plants and Ferns is compiled by Mr. F. Stratton, whose long experience as an Island botanist rendered him peculiarly fitted for this task. As might be expected this list may be regarded as practically complete, as it is doubtful if any really indigenous species have escaped observation. In regard to the localities given, it must be understood that many of these refer to observations made by Dr. Bromfield and others more than half a century ago, and though, in most cases, the plants are still to be found in these localities, in others they have disappeared.

Mr. S. W. Pring, who has written on the Rhizopoda and Infusoria, and given a considerable list of the latter, has devoted much time to the study of "pond life" and is an enthusiastic student of the microscope. In addition to direct service rendered to the "Guide" in this connection, Mr. Pring has helped indirectly in many ways, such as by searching journals for records, and in reading the printed sheets of the "Guide" in search of material for the errata page.

Messrs. S. W. Pring and F. M. Walker have searched the ponds of the Island for Rotifers with excellent results, the list of species discovered being surprizingly large considering the short time in which the work has been done.

Mr. E. W. Pollard gives a short list of marine worms, which were mostly noticed in the neighbourhood of Ryde. I hope that Mr. Pollard will find the necessary leisure to continue his researches amongst this neglected group.

Mr. Douglas Leighton has recently spent a portion of two summer holidays in searching our shores for Polyzoa, with very considerable success as the list of species given will testify.

The list of Spiders and other Arachnida has been compiled by Mr. F. P. Smith from specimens collected by himself and others. The list of spiders will I think be considered a good one; and the Mites have been neglected solely through want of time to collect them, for they are undoubtedly an interesting group.

The first order of insects to be dealt with is the Orthoptera, and Mr. Malcolm Burr kindly acceded to my request to write a list of the Island species as far as his information would allow him.

* Several fresh species of Island Hepatics have been discovered by Mr. H. H. Knight since the list in the "Guide" was printed, one of these being new to Britain.

The second order, Neuroptera, seems to have been much neglected here, and it was with difficulty that a list could be formed. Mr. W. J. Lucas, of dragonfly fame, was good enough to name, or get named, the specimens sent him, and to piece together the scattered records, adding useful notes as to the different groups.

Mr. Claude Morley, who has visited the Island several times, including a week of energetic collecting in the summer of 1907, compiled the list of Hymenoptera, not only from his own collecting but from all available sources. As might have been expected the Aculeata have hitherto received the most attention, the non-aculeate species having never been systematically collected. Mr. Morley has rendered service by supplying records of many species of Coleoptera, Diptera, and other insects, in addition to his more direct work of writing the Hymenoptera list.

Mr. E. A. Newbery has the distinction of having compiled the most extensive list in the "Guide"—the Coleoptera or beetles. Only those who have done similar work will realize the labour that such a compilation must have entailed. I am indebted to Mr. Newbery in the past for identifying the many species of beetles of my own collecting which figure largely in the list, and also for advice and suggestions in connection with the gathering of information for the present work.

The "Guide" is also indebted to Mr. Donisthorpe for his Supplementary list of Coleoptera which has made the section much more complete. Two species which should have appeared in Mr. Donisthorpe's list may be mentioned here: *Lathrobium rufipenne*, Gyll., Niton, July, 1906; and *Cis dentatus*, Nellié, a specimen taken near Sandown, July, 1906.

Mr. H. F. Poole, of Shanklin, has been most industrious in collecting information in regard to the Lepidoptera, with the result that a very considerable list has been compiled. Of the larger species it is improbable that many more will be added, but amongst the host of small forms there are doubtless many yet to be discovered. Mr. Poole has done valuable work for the "Guide" in the photographic way, for it will be noticed that the majority of the illustrations bear his name. No one has taken a more active interest in the progress of the undertaking than he has; not only in his own department of the Lepidoptera but in several other sections of the work his assistance has been invaluable.

The order Hemiptera has been ably dealt with by Mr. E. A. Butler, who spent a fortnight in the Island in the summer of 1907 and collected these insects assiduously during that time. With the species then observed, added to the records of others; a highly satisfactory list has been written. Mr. Butler is also responsible for the records of various insects which appear in the other lists.

Mr. Percy Wadham, of Newport, has written on the Fishes, both marine and fresh-water. As regards the latter, he has for many

years devoted much time to pisciculture in the Island, so is able to write from intimate personal knowledge of this group.

Mr. Wadham has also given us an account of our few Amphibians and Reptiles, including some introduced species and a rare and most interesting visitor—a Loggerhead Turtle.

The next contribution is by Mr. R. H. Fox, who writes on the Birds. The list is an excellent one, and so far as the resident species and regular migrants are concerned it may be regarded as practically complete, though, doubtless, accidental and occasional visitors will be observed now and again that will be new to the list. Mr. Fox has, in addition to a remarkably close acquaintance with our birds, a felicitous way of telling us what he knows about them, which I feel sure will appeal to those who read or refer to this volume.*

The final chapter of the organic series deals with the Mammals, and here again Mr. Wadham has done useful work in compiling a list of all the known species which have occurred in, or off, the Island. This list may be regarded as almost complete so far as the land is concerned, though very probably one or two additional bats may eventually be found; as regards the Cetaceans it is likely that several other species will visit our coasts sooner or later.

The "Guide" is also indebted to Mr. Wadham for several very interesting photographs. The one of the badgers entailed much labour, as to secure it the animals had to be re-stuffed in characteristic attitudes to represent a family party at the entrance to their burrow. The peregrine which appears in the picture as though attacking a pheasant was shot at a time when it had just killed one of these birds.

Mr. John Dover, of Totland Bay, who is devoted to the study of Meteorology, has very kindly, at the cost of much personal labour, compiled a number of tables to illustrate the weather conditions of the western end of the Island. Those who appreciate work of this kind will study these columns of figures and explanatory text with the keenest interest. It will be noticed that the amount of sunshine at Totland for the year greatly exceeds that experienced at several of the other health resorts.

Miss Gibson, of St. Lawrence, also supplies facts and figures of great interest in regard to the weather of the Ventnor district. These tables are of value, too, for comparison with those of Totland.

It would have been a matter of public interest if statistics concerning the Meteorology of the Newport district could have been added, as, being an inland station, the readings of the thermometer at any rate would have shown considerable variation from those of Totland and St. Lawrence—the hot days of summer being hotter and

* Since the bird-list was printed Mr. Fox has obtained information as to a second example of the Spoonbill, which was taken at St. Helens in April, 1895.

the cold days of winter colder than at these two stations, but, unfortunately, I was unable to obtain the necessary information.

It only remains to me to express my earnest desire that this volume may be useful. A witty American writer has recently expressed the opinion that the wicked lead useful lives as well as the righteous, inasmuch as they offer themselves to the rest of mankind as horrible examples to be avoided; and if it be found that in the course of this work I have done those things that I ought not to have done, and have left undone those things which I ought to have done, I am content to serve as the "horrible example" if by doing so those coming after me are enabled to profit by my mistakes.

I shall esteem it a favour if any readers of this volume who have done any natural history work in the Island will communicate to me the results of their observations, in as far as they apply to a work of this kind, and especially in regard to the increasing of the various lists by the addition of fresh names, and of fresh information concerning the species already recorded. I shall welcome, equally, criticism, and the correction of any errors that may inadvertently have crept into the book, with a view to eliminating the same in any future publication that may be issued in respect to the Fauna and Flora of the Island.

FRANK MOREY.

*Newport, I. of W.,
February, 1909.*

AN OUTLINE OF THE GEOLOGY OF THE ISLE OF WIGHT.

By G. W. COLENUTT, F.G.S.

THE great majority of people who have no fondness for scientific pursuits regard the Isle of Wight as being a very charming place, noted for its beautiful scenery and equable climate, and quite desirable from the point of view either of residents or visitors.

To the Geologist, however, the name of the Isle of Wight conveys a different idea, since he rightly regards the Island as being classical ground for the pursuit of his studies; for he knows that its strata have yielded in great numbers specimens which may be seen in many of the more important museums in the United Kingdom and elsewhere. Should the Geologist have done any practical work along its coasts, the mention of the Island may perchance conjure up in his mind the memory of happy days, when, with hammer in hand and a collecting bag slung on his back, he wandered along the coast and examined some of our many fine cliff sections, and from their strata collected his share of greatly-prized fossils. His thoughts may again turn to our favoured Island with a determination to continue his investigations at the earliest possible opportunity.

It is hoped that these few pages may be of assistance to the Geologist who is visiting the Isle of Wight for the first time, or, perhaps, desirous of renewing his acquaintance with its strata; for it has been suggested that a Naturalists' Guide to the district would be incomplete without some account of its Geology, since among Naturalists the Geologist may fairly claim to take a leading place. The great difficulty, however, is to condense such an account within reasonable limits and yet to retain its completeness in a sufficient degree, for there is much to describe and many inferences to be drawn; moreover, the outline should be of a practical nature, otherwise its usefulness may be called in question. To demonstrate that it is no easy task to give a concise epitome of the subject, it is only necessary to remind the reader that the coast-line of the Island measures (excluding tidal inlets) nearly 60 miles in length, and that for about 40 miles of the distance the cliffs and coast sections are accessible and afford opportunities for study and research.

Before going further, however, it is expedient that a plan should be arranged for dealing with our subject, and it would seem desirable that in the first instance a general survey of the district should be taken, so that the reader may be able to gather some idea of the physiographical features of the Island and their relation to its Geology. After this, it may be well that the succession of the Island strata should be described (as some of these are quite unique), and that a few remarks be made on the schemes of life prevailing in the epochs during which the different beds were deposited; the work of describing the beautiful sections to be found in the cliffs and along the stretches of coast-line may thereafter be undertaken. In the task of writing these pages, however, one essential object shall be kept constantly in view, namely, to make the work of the student more easy by directing him to the most interesting and instructive sections, and by indicating the several localities to which it is advisable that special attention should be devoted.

Of an irregular, rhomboidal, or lozenge shape—as will appear by a reference to the map in this Guide—the Isle of Wight lies adjacent to the County of Southampton, and its longest axis runs east and west; it is separated from the mainland by the Solent valley, through which the sea now flows—the width of the tidal waters being from about three to six miles.

At a comparatively recent period the Isle of Wight formed part and parcel of the mainland, and there is good reason for assuming that the last link was a neck of land running westward from Alum, or Totland Bay, to Studland Bay on the east coast of Dorsetshire. In order to bear out this statement, we must make an attempt to mentally reconstruct those parts of the district which have been eroded by the sea and denuded by the other natural agencies. When this has been done, the reader will be able to form an opinion as to the probable situation of the last dry land connecting the Island with the mainland, and also to understand how the hand of Nature has moulded and shaped the Island into its present form. It is not necessary to place any limit on the time which Nature has taken in this work, for “how many years ago” never finds any place in the computations of the Geologist. Man’s day is but as an hour, while the slow and majestic work of Nature is unending; and the physical forces seen in continuous operation now, are quite sufficient to account for all the geological phenomena which we have to investigate. Be it remembered, that there is no more reason for assuming that the operation of the forces of Nature suddenly became slower as soon as *Homo sapiens* was evolved from some lower type of *Homo*, than there is for suggesting that wondrous results arose from the evolution of the many *other* beings which have from time to time occupied their places in the scheme of life.

What we have to do in order to enable us to understand the physiographical history of the Island is, by the exercise of the best faculties of inductive reasoning, to reconstitute and reconstruct

those parts of the land which in more recent times have been denuded by the action of rain, wind, frost, and sun, and eroded by those agencies and by the beating surges of the sea. But before doing this, we must call to mind the great disturbance which once spent itself along the south part of England, at a time when the coast was very different from the one which we see before us now. It was a seismic upheaval or squeezing, which, coming from the south, raised the crust of the earth into gigantic billows, with crests and hollows, just such as one may see any day, on a small scale, on the surface of the troubled sea. The pressure must have been inconceivably vast, for the lines of the billows of the earth's crust extended for very many miles and affected the whole of the south-east of England—the lines running fairly parallel in an east and west direction. The crest of the billow is called an anticline, and the hollow a syncline. It may reasonably be assumed that in the hollow the strata would be compressed, while at the summit of the arching or crest of the billow the strata would be pulled asunder, cracked and dismembered. Now one of these billow crests (or, more correctly speaking, two duplicate crests) extended through the Isle of Wight, and as all our strata are conformable—having been laid down in regular succession one over the other—it squeezed up those strata into the form of an immense arch, with a gradual slope to the south and a much steeper slope to the north. The southern hollow, or syncline, was away in the land now removed by the sea—the crest of the arching following a line approximately from Sandown to Brook—while the northern hollow will be found to have its line from Foreland Point right through the Island to Totland Bay. The area subjected at this time to the greatest amount of violent disturbance, appears to have been the land away to the south of Dorsetshire, as the strata along the coast of that county clearly show how far-reaching was the upheaving and crumpling effect produced.

Upon our old land surface the erosive forces of Nature must have exerted their full disintegrating effects during that period commonly known as the "Great Ice Age"; and, although the evidence of the presence of glaciers in the South of England is lacking, a great erosion and denudation at that time undoubtedly took place. The long arctic winters probably produced a glaciated land-surface, and the short hot summers, with their accompanying torrential falls of rain, together, led to the disintegration and planing down of the central arch of the anticline, and the deepening of the hollow of the syncline; our present river systems had their origin at that period, and the gravel deposits were then probably laid down.

The Solent Valley is simply an old river-bed, and the Geologist, standing on the summit of Bowcombe Down and looking northwards across to the mainland, can reconstruct in his mind the state of affairs which prevailed in those days of long ago. The ancient Solent River flowed eastward, and its tributaries, on its northern

bank, were rivers at Poole, Christchurch, Lymington, and Beaulieu, with the Test, Itchen, and Southampton Water; while on its southern bank it drained the Western Yar, Newtown River, Medina, Wootton River, and the Eastern Yar, in addition to other and smaller streams. The gravel deposits along the present coast lead one to assume that the Solent River flowed into the sea somewhere south of Littlehampton.

During the long time which has elapsed since the last great crumpling of the land-surface took place, the erosive forces of Nature have been in full and constant operation; and to the long-continued action of those agencies we owe the contours of our present coast-lines, and the configuration of the landscape as we now see it. The softer and yielding strata have been denuded and shaped into depressions, hollows, or valleys, leaving the more resisting beds and rocks standing up in the form of hills and ridges. The land away to the south-east, south, and south-west of the Island was gradually eroded—the old Eastern Yar and the land it drained, alike disappearing (for it must be remembered that the present Yar was only a tributary of the larger river which cut out the Sandown level and the big gap between Brading and Bembridge Downs)—while a similar fate also befel the Western Yar and that portion of the old land through which the river took its winding course. During this period the extension westward of our central range of Chalk hills (doubtless connected by similar hills with Ballard Down in Dorsetshire) offered a greater resistance to the disintegrating forces which were in constant action; but at some point—probably at about the middle of that long line of Chalk which is now known to mariners as the “Needles Bridge”—a breach was made by the sea, and once through this gap the surges of the Channel would find an easy prey in the softer strata above the Chalk.

Reconstructing the district on these lines one is led to assume and believe, that the last junction between the Island and the mainland was a neck of land forming the southern bank of the old Solent River, and that the final severing of the link was effected somewhere in the space which is now covered by the sea in Christchurch Bay. When once that last link was cut, the tides would have no difficulty in doing the rest. The sea enlarged its gap into the old river-banks and the erosion went on until Christchurch Bay was formed, and that process has been continued without cessation to this day. The tidal constant tells us how much the ebb and flow has assisted in the work of enlarging and widening the waters which isolate the Island from the mainland, for the action of the tide is a most important factor in assisting erosion and in sweeping away the debris from the coast-line.

It is to the varied nature of its strata, and the unequal effects of the denudation and disintegration during long lapses of time, that the Isle of Wight owes its charming features of hill and dale, and the great picturesqueness of its beautiful scenery.

THE SUCCESSION OF STRATA EXPOSED IN THE ISLE OF WIGHT.— That the Island is a deeply interesting place to the Geologist will be apparent when we consider the great variety of deposits and the splendid cliff sections of strata to which, in our somewhat restricted area, the observer has access. The arching of the anticlines and the depressing of the syncline, of which we have already spoken, have resulted in tilting a portion of the beds up from a horizontal to a sloping or vertical position, and thus, within a short distance, the student can examine a number of different deposits and trace with accuracy the succession of the different strata.

The range of Island strata, in descending order, is as follows :—

Blown Sand, Alluvium, and Peat ..	RECENT			
Valley Gravels, Angular Flint Gravels of the Chalk Downs	PLEISTOCENE	}	TERTIARY	
Plateau Gravels				
Hamstead Beds	OLIGOCENE	}		
Bembridge Marls				
Bembridge Limestone				
Osborne Beds				
Headon Beds	EOCENE	}		
Headon Hill Sands				
Barton Beds				
Bracklesham Beds				
Lower Bagshot Beds				
London Clay				
Woolwich and Reading Beds ..				
Chalk with Flints	CHALK	}		UPPER CRETACEOUS
Chalk Rock				
Middle and Lower Chalk				
Chloritic Marl				
Chert Beds	UPPER GREENSAND	}		
Sands				
Gault				
Carstone	LOWER GREENSAND	}	LOWER CRETACEOUS	
Sandrock Series				
Ferruginous Sands				
Atherfield Clay				
Wealden Shales	WEALDEN BEDS	}		
Variegated and Purple Marls ..				
Sandstone Beds of Brook Point ..				

Should the Geologist desire to work in the upper portion of the Oligocene strata (that is to say the Hamstead—or Hempstead—Beds, Bembridge Marls and Limestone, and the Osborne Beds) he must of necessity come to the Isle of Wight, as in no other place in the world are the exact equivalents of these beds to be met with, although, of course, deposits of a somewhat similar age occur, but not in the United Kingdom. The unique character of some of our more important beds is therefore a feature of great interest and importance. The Oligocene Beds have a further claim to the attention of the student of Geology; for they give us a clearer insight into the life-history of the periods during which they were deposited than most strata do. Having been laid down chiefly in the confined spaces of lakes, rivers, or estuaries, and therefore in close proximity to the ancient land surfaces, we may reasonably look for the remains of many of the higher forms of life among the fossils which patient research may discover in these deposits.

Three great alternations from estuarine to salt-water conditions took place during the deposition of the Oligocene Beds, and the evidences of these changes are seen in the Marine Beds of the Middle Headon series, the Marine Band above the Bembridge Limestone, and the Marine Clays at the upper part of the Hamstead series—all most interesting features which will be certain to attract the attention of the student.

As a general rule, a characteristic of the organic remains found in fossiliferous strata of marine origin is the large number of the species represented, although of each species there may be only a few fossils found. A different average prevails in the estuarine deposits of the Oligocene series, for in these we find countless myriads of fossils, but the number of separate species is comparatively very small. In other words, in marine beds we have many species and few individuals; and in estuarine deposits very many individuals and few species. All the Oligocene strata possess another noticeable feature in their frequent variations, both as to thickness and composition—a reasonable consequence, incident to estuarine conditions where the rate of deposition must of necessity vary from time to time. The different beds at several localities may appear to the student to bear little resemblance to each other, and their correlation is oftentimes difficult, but this only adds zest to the pursuit of our science.

Some of the Eocene Beds of the Island are continued into the mainland north of the Solent, and cover a considerable area in the south part of the County of Southampton; they bear a marked resemblance to, and doubtless were deposited contemporaneously with, some of the beds of the London Basin. In the Island the deposits follow each other with regularity, and, through the tilting up of the strata to a vertical position, their sequence can easily be followed in our splendid cliff-sections. With the exception of certain lignite and pipe-clay bands the whole of the Eocene Beds are of

marine origin, although it seems probable that they were deposited at no great distance from the land.

In descending order, we have the Upper and Lower Cretaceous deposits—the sub-divisions of which are shown in the table of strata—all of marine origin excepting the lowest or Wealden Beds. These latter are of surpassing interest to the Geologist, representing as they do the detritus washed down by a great river draining some old-world continent, and forming the equivalent of the vast accumulations of silt which some of the larger rivers are at the present day depositing in the shape of deltas. The strata teem with organic remains, and the Wealden Beds, being well exposed in some of our cliffs, will doubtless claim the close attention of the student.

The reader should bear in mind the remarks which have already been made as to the tilting up of the strata by compression into the form of two anticlines with their accompanying syncline, for we find the Island divided in an east and west direction by the highly-inclined beds of Chalk, which form the chain of hills extending from Bembridge Down to the Needles. To the north of this range the Tertiary (Eocene and Oligocene) Beds occur; while south of the Downs the older or Secondary strata are to be found. For some distance north of the Chalk Downs the Tertiary Beds are vertical, or very highly inclined, and it is not until we reach the Bembridge Limestone that we find the actual curve of the syncline making itself apparent. On the southern slope of the anticlines we have the present range of hills from St. Catherines to St. Boniface Down—representing all that now remains of a higher and more extensive series of eminences. The great earth-movement came from the south, and consequently the lines of tilting run about east and west—the focus where the disturbance was most violently felt having apparently been centred somewhere in the land, now eroded away by the sea, lying to the south-west of the Isle of Wight.

When we come to examine the details of the strata exposed along the north shores of the Island we shall, however, have reason to notice that some subsidiary undulations took place, so that the beds are gently raised or depressed in a direction at about right angles to the true course of the main lines of disturbance. It is well also to remember that the contours of our coast-line, and the points of view from which the sections are examined, sometimes make the true dip of the strata rather difficult to recognise, but a solution of such problems becomes comparatively easy when the student has thoroughly grasped the main features of the way in which our strata are arranged, and the manner in which they have been affected.

In the space afforded by these few pages it is neither possible to give a detailed description of the whole of the rocks of which the Island is composed, nor to do more than throw out a few hints as to the best mode of pursuing the most profitable investigations in our chief sections. To the pages of the “Memoirs of the Geological Survey of the Isle of Wight” the student must resort for further information

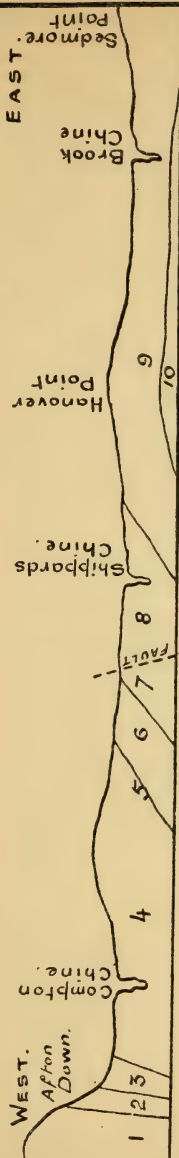
in regard to details necessarily omitted here, and a copy of the "Survey Map of the Island" will be of great assistance to anyone who desires to undertake practical work along our coast-lines.

COAST SECTIONS FROM THE NEEDLES TO CULVER CLIFF, VIA THE UNDERCLIFF.—The sections exposed in the cliffs along that part of the coast with which it is proposed now to deal are sure to be visited by anyone who wishes to study the Geology of the Island. The Brixton (or Brighstone) anticline is the dominant feature of the south-western coast, and its influence is most clearly shown; it brought up to the sea-level the lowest beds which are to be found at the surface anywhere in the Island, and the curving or arching of the strata is plainly visible in the cliffs at Brook. The Chalk (Chalk with Flints) at Scratchells Bay may be worthy of a visit, though access is difficult and can only be effected by rowing-boat and in fine weather.* The Chalk at that horizon is, however, rich in fossils. Between Scratchells Bay and Freshwater Gate, and thence on to Compton Bay, the student can do little work in the Upper, Middle, and Lower Chalk, as in most places the cliffs are nearly vertical and descend sheer into the waters of the Channel. At Freshwater Gate one may notice the site of the valley of the old Western Yar, the floor of the foreshore consisting of Alluvium, and on each side of the ancient channel the rubbly chalk seen in the cliffs is capped by Valley Gravels.

It is to the coast at Compton Bay that most attention will probably be given, and on Plate I. is given a rough sketch enabling the reader to form an idea as to the way in which the different strata are disposed in the cliffs from Afton Down to Sedmore Point. At the extreme western end of the Bay the Upper Greensand will be seen underlying the beds of Lower Chalk, and the grey or pale-buff strata (of which a diagonal section only is seen) rise up nearly vertically in the cliff-face at the foot of Afton Down—the thickness of the Upper Greensand series being here about 90 feet. It is not worth while for the student to attempt collecting fossils from these beds in Compton Bay, as much better and more accessible exposures will be found in the Undercliff district. Below the Upper Greensand is the Gault Clay, here of about 140 feet in thickness, and, although at many places in the South of England this marine deposit is exceedingly rich in fossils, in the Island the strata yield very few organic remains, and these are mostly in an indifferent state of preservation. The dark-green, brown, and deep-red cliffs in Compton Bay show a section of the beds of Lower Greensand, and form an imposing feature in the coast scenery. This is not, however, an exposure meriting more than a hasty examination, as these strata

* For a detailed description of the Chalk of the Island *vide* "The Zones of the White Chalk of the English Coast, Part V. The Isle of Wight." By Dr. Arthur Rowe, F.G.S., Proc. Geologists' Association, Vol. XX., Part 4.

CLIFF SECTION - AFTON DOWN TO SEDMORE POINT. — — (NOT DRAWN TO SCALE) —



UPPERCRETACEOUS. { 1. Lower Chalk.
 2. Upper Greensand.
 3. Gault.

4. Lower Greensand.
 5. Perna Bed.

LOWERCRETACEOUS { 6. Wealden Shales.
 7. Variegated Marls.
 8. Wealden Shales.
 9. Variegated Marls.
 10. Sandstones with Pine Raft.

Cliffs capped with Valley-Gravels and Brick-earth.

at Atherfield are much more accessible and fossiliferous. A bed of hard, sandy, ferruginous rock, crowded with shells of marine *Mollusca*, forms the basement of the Lower Greensand and underlies the Atherfield Clay, but in Compton Bay this bed is mostly hidden by the landslips at the eastern end of the red cliff.

The upper portions of the Wealden Beds next claim attention, and they consist of dark-blue, laminated clays known as "paper shales"; evidently these shales were deposited in the quiet, brackish waters of an estuary, and are in many places crowded with shells of *Cyrena*, *Cypris*, *Paludina* and similar forms. There is some evidence that the great stratigraphical disturbance produced a fault in Compton Bay, as a duplication of the Upper Wealden Beds occurs, and the line of faulting is immediately to the westward of a piece of cliff at about the middle of the Bay, showing a portion of the paper shales contorted in a highly interesting way. The result of this disturbance is seen in the two sections of a portion of the Lower Wealden Beds, known as the Purple or Variegated Marls, to be noticed in the cliffs here and also in the two sections of the paper shales. The greater part of the latter series may be viewed to the eastward of the line of fault, and many fossils may be collected. The slabs of laminated limestone crowded with estuarine *Mollusca* lie in profusion on the beach, and in the clays there is a good deal of fossil wood, much charged with iron pyrites. The passage from the shales to the marls is at about 200 yards west of Shippard's or Compton Grange Chine. While at Shippard's Chine the student is recommended to examine the beds of Alluvium at the top of the sides of the cutting, as these contain a great deal of wood in the form of sticks and branches and also quantities of hazel nuts. This Alluvium, of a sandy nature, appears to have been laid down by the little stream, which, then a tributary of the old Western Yar, at one time flowed at a higher level than it does now, and the origin of the chine is, of course, to be traced to the erosion caused by this little flow of water.

It will be observed that the Wealden Beds are subject to great variations and that their characteristics are not constant—beds of sandstone will be noticed to thin out and become quite changed even within short distances. This is well shown in the beds of limestone and sandstone forming the cliff just to the west of Brook Point, or Hanover Point as it is sometimes called. At the Point the student will find much to interest him, for here can be seen the well-known fossil "pine-raft" stretching out from the base of the cliff towards low-water mark. The recumbent trunks of the fossil trees are of considerable size, and they represent, no doubt, the remains of a raft of logs, floated down and deposited in the sand-banks of its delta by the ancient Wealden river. The wood is of a black or dark-grey colour, and, unfortunately, is highly charged with iron pyrites which renders the fossil wood somewhat difficult to preserve. From the Point to Brook Chine are exposed the lowest visible beds of the Wealden series, and eastward of the Chine, the strata, instead of

dipping sharply to the north-west, slope gradually to the south-east—in fact, we are here at about the central line of the Brixton anticline, and the arching of the strata is plainly visible in the cliff; it being, of course, understood that the trend of the coast is such that a diagonal section is shown, and not one cut at right angles to the direction of the anticlinal fold. From Sedmore Point eastwards, along the coast nearly as far as Cowleaze Chine, we have cliff sections of the purple and variegated marls of the Lower Wealden age. The strata along this part of the coast have yielded some of the most splendid reptilian remains which have ever been found in England, and this district has long been a classical one in the annals of our science. The Wealden age was a time when reptiles flourished—the huge, terrestrial *Iguanodon*, with its Kangaroo-like form, the *Plesiosaurus* and *Ichthyosaurus* (both aquatic in their habits), the *Goniopholis* (an ancestor of our present Alligators) and many other reptiles, had their day when the sediment in the delta of the Wealden river was being deposited, and in the clays, marls, and sandstones then formed their bones may be discovered.

It is not suggested that the student may, by simply going to Brighstone Bay, find a fossil *Iguanodon* waiting to be collected—on the contrary, these reptilian remains require much patience to discover. The foundering of the cliffs after winter storms and the scouring of the beach and foreshore by a heavy “ground sea,” are necessary before one can reasonably expect to make a “find”; though it is quite possible that amongst the shingle of the beach, portions of water-worn reptilian bones may be found, while careful search may, of course, lead to the discovery of bones *in situ* in the clays, marls, and sandstones of the coast. Between the cliff called Barnes High and Shepherd’s Chine (not to be confused with Shippard’s Chine in Compton Bay) the Wealden Shales gradually descend to the beach, and near the bottom of the Chine the shales yield plenty of leaves of the fern *Lonchopteris Mantelli*, besides an abundance of shells of fluviatile *Mollusca*. It is possible here to trace in these higher beds a transition from estuarine to more marine conditions, and the characteristics of the fauna change as we make our way along to Atherfield Point, where the junction of the Wealden Beds with the Lower Greensand may be examined at sea level. Blocks of coarse-grained, gritty sandstone, much coloured by iron oxide, lie in profusion on the beach and are crowded with fossils.

This band of sandy ironstone, forming the basement bed of the Lower Greensand, is a marked feature in the cliff and is known as the Perna Bed; beyond Atherfield Point it stretches away to sea and forms one of the dangerous ledges on which many a fine ship has been wrecked. The student will probably devote some time to working in the Perna Bed, but a good hammer and chisel, and much care in handling the tools, are needed before the fossils can be extracted with success. The large oyster (*Exogyra sinuata*) and

the big *Corbula* are very numerous in this bed, while the fossil shell most difficult to extract in a perfect state is the *Perna Mulleti* with its elongated hinge. On our way eastward we now pass the Lower Greensand Beds in ascending order, and the Lobster Bed of the Atherfield Clay will be noticed in the cliff beneath the lifeboat slipway. The crustaceans are to be found in small nodules of hard, sandy clay of about the size and shape of the fossils they contain. Above these beds are the sandy, argillaceous deposits in which large, spherical, concretionary nodules of great hardness occur—known as the “Cracker Rocks.” They require smashing with a sledge-hammer, and in their sandy centres some beautiful fossil *Gasteropoda* are frequently found. Passing along the coast, blocks of sandstone lying on the beach may often be found to be crowded with shells of *Terebratula* and *Rhynchonella*, and the student may pass many profitable hours in collecting fossils from the rich sections of Lower Greensand in this locality. Space does not permit of a detailed description of the many features of interest, and one must leave unwritten a full account of this classical district. The cliffs eastward to Blackgang Chine continue to show the fine series of Lower Greensand Beds, and in the Chine itself a splendid section is visible, as is also the case in nearly all the chines on the south-west coast of the Island. All the cliffs are capped by the extensive deposits of Valley Gravels, and there are also considerable recent accumulations of sand, which, dislodged by wind erosion, has been blown up over the face of the cliffs. To the scouring action of the fierce winds, which blow from the south-west, the enlargement of most of the chines is due, and many instructive examples of wind erosion may be seen.

The highest beds of the Lower Greensand (the Carstone)—coarse and highly-ferruginous grits—may be noticed in the top part of Blackgang Chine, and these are overlaid by the dark-blue, unctuous clay of the Gault. We have now progressed so far away from the axis of the Brixton anticline that its influence is partially lost, and we find that the slope of the strata towards the south is a very gradual one.

Attention must now be directed to the geological features of the district between Blackgang and Ventnor—the famous Undercliff. The effects produced by the denudation of the more yielding parts of our strata have already been spoken of as producing the present configuration of our hills and valleys, and along this portion of the Island these results are very apparent. The range of Downs from St. Catherines to Shanklin Down have a capping of Lower Chalk, resting on the thick and hard beds of Upper Greensand; these overlie the soft, slippery Gault Clay, which, in its turn, is resting on the Carstone Beds of the Lower Greensand. The exact junction between the Carstone and Gault along the Undercliff is difficult to determine, as there has been so much slipping and foundering of the land surface. The Gault is of a dense and saponaceous nature, and,

being impervious to the soaking of rain-water, it has caused, and still causes, the foundering and gradual slipping of all this land abutting on the coast-line. The whole district of the Undercliff—some 7 miles in length—has been fashioned by rain-water percolating through and disintegrating porous strata, until, meeting the dense Gault Clay, it is thrown out in the form of many springs and runnels of water, which only serve to lubricate the surface of the clay and lead to the sinking and sliding of the land. The whole of the middle and lower part of the district really consists of a talus of masses of rock and collections of debris fallen from the face of the inner line of cliffs of Upper Greensand. The section along the face of these higher cliffs is, of course, on a line at about right angles to the dip slope, and the strata appear therefore to be horizontal. On the north side of these Downs we find that the Gault has led to a good deal of slipping of the land, and to much soil-creep down towards the valley; it has also caused the breaking away of the edges of the Upper Greensand escarpment, and in several places inland cliffs have thus been formed.

The student may pass many profitable hours in collecting fossils from the fallen masses of strata along the coast between Rocken End and Ventnor, but it must be remembered that few sections of strata *in situ* can be met with, and that in this confused mass of slipped material quite a mixture of strata has taken place. The higher beds of the Upper Greensand may be well seen *in situ* at the Cripple Path, near Niton; also in the quarries at Ventnor, where considerable sections may be seen, and again in the quarry near Luccombe. The whole of these deposits are purely marine, and contain the remains of an oceanic fauna. The bands of chert form a conspicuous feature along the Undercliff and appear as ledges in the face of the inner cliffs—each band of chert projecting, while the softer stratum between has been eroded by the action of wind and rain. These beds of chert abound with the spicules of sponges, and are the silicious remains of these organisms. At Ventnor the thickness of the Upper Greensand is about 105 feet.

As Ventnor is reached we find that the Carstone has again become visible along the lower cliffs, and is resting on the Sandrock series of the Lower Greensand. The sea cliffs from Bonchurch round the shore to Luccombe show sections of Sandrock corresponding to that seen in the upper part of Blackgang Chine. The coast, of course, is now trending northward, and we are passing the beds in descending order on the southern slope of the Sandown anticline. Between Luccombe Chine and Shanklin the student should have no difficulty in collecting plenty of fossils characteristic of the Lower Greensand, although the series here is not so rich in organic remains as it is at Chale Bay. Many nodules of fossil wood and plenty of shells of *Exogyra* may be found on the beach to the south of Shanklin. From Shanklin to Sandown we continue to pass the beds of Lower Greensand, until, somewhere near Sandown Pier, the Atherfield

Clay and the Perna Bed rise up from below sea level, but are not visible, being concealed by buildings.

Northward for a little over a mile we have a section of the Wealden Beds, arched by the Sandown anticline, the line of which runs inland a little to the north of west. We do not see the southern slope of the Wealden Beds, as any possible section is obscured by the sea-walls. Just beyond the end of the sea-wall we get our first section of the Variegated Marls, and these are duly followed by the Paper Shales of the upper part of the Wealden series—the strata now dipping quickly to the north. Plenty of fossils may here be collected, and the cliffs have yielded many important reptilian remains, but the section is not so rich in organic remains as those on the south-west coast of the Island.

The Wealden Beds terminate at the base of Redcliff, and, unless obscured by the shingle of the beach, the Perna Bed may be easily located. We pass in turn the Lower Greensand Beds of Redcliff (here very much less fossiliferous) and then the Gault appears; it is almost vertical, and is seen at the place where the footpath leads up from the shore to the summit of the cliff.

The Upper Greensand may easily be examined in the fine sections at Culver Cliff and many fossils may there be collected, although the strata are neither so thick (only about 80 feet) nor so rich in organic remains as they are in the southern range of Downs.

The Lower Chalk can conveniently be worked in the section in front of Culver Cliff, but it does not yield a very abundant return in the way of fossils, nor does the Middle Chalk to be seen in the Cliff further round the point. It might be advisable here to caution the student against attempting the passage along the shore towards Whitecliff Bay—this cannot be accomplished without wading for a part of the way, and it is somewhat dangerous to do much work in front of these cliffs excepting on a falling tide.

THE COAST-LINE FROM WHITECLIFF BAY TO EAST COWES.—In the foregoing portions of this sketch of the Geology of the Island the older or Secondary rocks have been somewhat roughly described. Along that portion of the coast which it is now proposed to investigate quite different kinds of strata will be dealt with, representing newer phases of development and embodying marked advances along that path of evolution which has led up to the scheme of life prevailing at the present time. The strata above the Chalk, it has already been remarked, are splendidly represented in the Isle of Wight and afford ample opportunities to the Geologist for investigation and research.

The sharp, northerly dip of the strata, on the northern side of the anticlines, has already been mentioned, and we shall find that the Eocene Beds have been materially affected, having been tilted up into a perfectly vertical position. At Whitecliff Bay—from which place our examination of the north-east coast of the Island is to

commence—the cliffs present a most desirable field for the investigation of the strata of the Eocene age, and the accompanying diagram (Plate II.) will enable the reader not only to follow the succession of the various beds, but also, on the spot, to locate the junctions between the several deposits.

It will be advisable for the student, while at Whitecliff, to take the opportunity of examining the Upper Chalk, of which a good section is to be seen in the imposing cliff at the south end of the Bay. The Chalk here is, however, not particularly rich in fossils, and many of those that are to be found have been much crushed and damaged by the great forces which tilted up the strata to a vertical position. Many of the flints are also smashed, and they may be found *in situ* completely shattered—an eloquent proof of the stupendous nature of the jerk to which our Island rocks were once subjected.

The junction between the Chalk and the first of the Tertiaries—the Woolwich and Reading Beds—is obscured by landslips on the sloping and grass-covered cliff, but these beds are easily distinguished by the deep-red colour of the soft clay, which is practically unfossiliferous and is about 163 feet in thickness.

Above this series, in ascending order and in our passage northward along the foreshore, we find the London Clay forming the first of the low, undulating cliffs, the junction being marked by a band of pebbles. The thickness of the London Clay is 320 feet; it is a ferruginous or dark, bluish-brown, sandy clay of purely marine origin. The fossils are not well preserved, the most abundant being a *Pholadomya* and *Panopea*, with a *Pinna* and *Ditropa plana*. There is a band of concretionary ironstone, occasionally exposed on the foreshore, crowded with fossils which, in this matrix, are fairly well preserved. Higher up in the series there is a layer of septaria, which may possibly be found to contain the shells of the *Pinna*.

At a line in the cliff 37 feet before reaching the band of hard, ferruginous sandstone (easily identified on the beach) the junction occurs between the London Clay and the overlying series of grey and pale-yellow, sandy strata known as the Bagshot Sands. There is a singular absence of organic remains—except those of plants—in these beds, but the student will find plenty to interest him in the layers of sandy clay crowded with leaves, &c., which, unfortunately, are not well preserved. The thickness of the Sands is 100 feet, and they are succeeded by the important marine sands and clays of the Bracklesham Beds—the junction being usually placed at the band of black, flint pebbles forming an easily recognised feature in the cliff.

The Bracklesham Beds are here of 650 feet thickness, and consist of sandy clays of a dark, greenish-blue or brown colour; there are several bands of marine fossils and also a bed of lignite (some three feet in thickness) at about the middle of the series. A prominent bed of brown, sandy clay will be noticed to be crowded with small

CLIFF SECTION - WHITECLIFF TO THE FORELAND.

(NOT DRAWN TO SCALE.)

SOUTH

NORTH.



Thickness in feet		
163	1	Woolwich and Reading Beds.
320	2	London Clay.
100	3	Lower Bagshot Beds.
650	4	Bracklesham Beds.
162	5	Barton Beds.
184	6	Headon Hill Sands.
212	7	Headon Beds.
100	8	Osborne Beds.
10	9	Bembridge Limestone.
91	10	Bembridge Marls.
	11	Valley (?) Gravels.

Eocene.

Oligocene.

P = Band of Pebbles. L = Lignite.

G.W.C.

shells of *Cardita planicosta*, while larger shells of this species occur higher in the series. Just north of a founder in the cliff is the seam of dark-green, sandy clay full of *Nummulites laevigata*. If the student visits Whitecliff Bay at low water, and after the prevalence of favouring winds, he may find that most of the sand on the fore-shore has been swept away, and then, out towards low-water mark, the succession of the beds may be splendidly seen and an abundance of fossils may be easily collected. Much could be written as to the details of the strata but space forbids, and we pass on to glance at the overlying and still vertical beds of the richly-fossiliferous, marine Barton series. The small *Nummulites variolarius* will be found in abundance, and also the shells of *Mollusca*, but the section of the beds is at present partly obscured in the cliffs by landslips and growths of bushes and grass, &c.

The yellow and buff Headon Hill Sands, forming a prominent cliff, are next in order and have a thickness of 184 feet, but are practically devoid of organic remains. These sands constitute the highest division of Eocene strata, and in the overlying beds we find a marked change in the characteristics of the fossils, thus enabling us to recognise that in the Oligocene age great advances took place along the path of evolution.

The Lower, Middle, and Upper Headon Beds at Whitecliff Bay form a series of sandy clays and marls 212 feet in thickness, and of these the Middle Beds are of marine origin—a complete change from the purely freshwater strata on each side of this band which is richly fossiliferous, but is, at the present time, not well exposed on account of a foundering of the cliff some years ago. Plenty of fossils may be collected here from the Headon series, but any detailed description of the organic remains must be omitted. The pathway to the top of the cliff marks the Osborne Beds of red and pale-green, mottled clays—here almost unfossiliferous, and of much less thickness than is the case with this formation at other places in the Island. Above these Osborne Clays we have the prominent beds of Bembridge Limestone coming down to the shore in a quick curve, and, assuming within a short distance a nearly horizontal position, stretching away towards the Foreland to form the well-known Bembridge Ledge. In the curve of this Limestone one can see an excellent example of the synclinal fold of the strata, contemporary with, and forming a natural sequence to, the anticlines of which mention has already been made. The Limestone at Whitecliff is about 12 feet thick, and consists of two beds of rock with an intervening layer of clay and marl; it is an entirely freshwater deposit, and a portion of it is crowded with casts of the shells of *Linnea* and *Planorbis*; having a well-defined, transverse jointing the limestone readily separates into rough blocks, and many of these lie strewn on the beach. Just round the point towards the north we have an opportunity of examining the beds above the limestone—these show a complete reversion from freshwater to marine conditions of

deposition. A band of hard, sandy rock, seen as a ledge or shelf at about high-water mark, is crowded with oyster-shells and other fossils of which good specimens may be collected. Above this deposit the marls show a recurrence of fluviatile conditions, as evidenced by the series of laminated clays, &c. (often rich in organic remains), known as the Bembridge Marls. These beds, at this place, have been subjected to much denudation and only show a total thickness of 91 feet. They may be examined in the low cliffs until they disappear beneath the capping of Valley Gravels which form the cliff face from near the Foreland round as far as the entrance to Brading Harbour.

In our passage along the eastern coast from Ventnor to the Foreland we shall have followed a direction transversely across the lines of the Sandown anticline and the syncline, the southern lip of which is plainly seen at the north end of Whitecliff Bay. In the journey along the north-east coast we shall be following a line nearly parallel with the axis of the syncline, but at some distance therefrom according to the contours of the coast-line; it will also be noticed that the strata are subject to certain undulations in directions at about right-angles to the main lines of the disturbance. It is necessary here to call attention to these features, as otherwise the student may have difficulty in following the succession of the beds. These remarks also apply to that part of the coast which will be described in the succeeding division of this paper.

Just beyond the end of the sea-wall at St. Helens old church the lower part of the Bembridge Marls may be seen in the rough cliff, and fossils characteristic of this horizon may be collected. The bands of Bembridge Limestone will be noticed on the foreshore, and they quickly rise up into the cliff near Nodes Point. Beneath the Limestone the Osborne Beds in this neighbourhood attain their greatest thickness, and continue at sea level along the coast as far as Osborne. In Priory Bay the sections are much hidden by the sea-wall, but slabs of ripple-marked, flaggy limestones may sometimes be seen on the foreshore, while at Horestone Point massive blocks of limestone from the middle of the Osborne series will be noticed. The cliff section at the Point is much confused by landslips, and the correct correlation of the different beds is difficult. Just to the east of Sea View pier the clays on the foreshore (when not hidden by sand and shingle) will be found to be rich in organic remains, but better sections at this horizon are to be found further along the coast.

The Osborne Beds were divided by Professor Forbes into two divisions—the Upper or St. Helens Sands, and the Lower or Nettlestone Grits—and the masses of hard, concretionary limestone, forming so striking a feature on the shore at Sea View, are the beds at the top of the Nettlestone Grits. This limestone is of freshwater origin, and contains a few rolled fragments of turtle bones and also shells of *Limnea*, &c. The Osborne Beds east of Sea View form an elongated arch, but no sections are visible. The marly limestone may be seen *in situ* on the foreshore in front of the grounds of

Appley Towers; and at Players Copse, west of Ryde, a similar band of stone will be noticed descending to sea level, and extending from the base of the wood-covered cliff out on to the shore in a ledge of weed-covered rocks. The fossiliferous clays above the limestone were, many years ago, exposed a short distance to the westward of this ledge, but the section is not now visible. Some of the flaggy, ripple-marked masses of limestone from a little higher up in this series may be noticed in the Copse and on the beach before Binstead Brook is reached.

From here to Wootton Creek it is not possible to do any geological work, as the woods come down to high-water mark, but the strata underlying the foreshore are the red and mottled clays at the top of the Osborne series. Some blocks of Bembridge Limestone lie on the beach at Fishbourne. At the Creek the strata make rather a sudden rise, and on the west side of the estuary the Bembridge Limestone is found at the top of the broken and slipping cliff. This rise of strata brings up the Osborne Beds, and the fossiliferous band is well exposed along the width of the foreshore as far as the causeway at Woodside House. The rocks out towards low-water mark are masses of the yellow Osborne Limestone.

For work in the Osborne Beds the student is recommended to visit this section, as many of the seams of laminated clay will be found to be very fossiliferous. Further west no good sections of strata are visible as the foreshore is covered by recent accumulations of mud, and any possible exposures in the land abutting on the beach are hidden by the woods and sea walls until we reach Old Castle Point. On the eastern side of Cowes Harbour there is an interesting section at the lower part of the broken ground covered by the copse. The higher parts of the Upper Headon Beds are seen at the base of the cliff, and fossils may be found in the laminated, estuarine clays and marl. The presence of the Osborne Beds, with the Bembridge Limestone, can be seen in the confused accumulation of debris which landslips have brought down to the beach, but the upper portion of the cliff is covered by the copse and no section is visible.

THE COAST FROM COWES TO THE NEEDLES.—There are evidences that the estuary of the River Medina marks the line of a fault, for the differences in the levels of the strata on the two sides of the Harbour can only be explained by some disturbance of this kind. At Cowes the Headon Beds do not appear at the surface at all, and it is the lower part of the upper division (St. Helens Sands) of the Osborne Beds which is found at sea level, while the Bembridge Limestone and Marls occupy the higher parts of the sloping land on which the town of Cowes is built. Passing westward by Egypt Point, no sections are visible until Gurnard is reached; we there find that in a lateral undulation the beds are descending, and that the foreshore and low cliffs show the red and mottled clays at

the top of the Osborne Beds, with the Bembridge Limestone in broken masses in the sloping cliff and as fallen blocks lying on the shore. Beyond the marsh the first cliffs are found showing sections workable by the Geologist, and the two seams of Bembridge Limestone form a marked feature; they descend with a gradual slope and pass out to sea at Sticelett Ledge.

It has already been remarked that the top clays of the Osborne Beds have as yet yielded no fossils, but the Bembridge Marls, overlying the Limestone, are rich in organic remains and here attain their full development. About 6 feet above the higher band of Limestone is a peculiar layer of hard, finely-grained, grey, septarian rock, of a texture resembling lithographic stone and "ringing" under the hammer; it is transversely jointed and breaks with a conchoidal fracture, and from the number of beautiful insect remains which have been discovered in this deposit, at Gurnard and Thorness Bay, it is usually called the Insect Bed. It is of a thickness varying from two inches to a foot or more; continuously throughout the Island it overlies the marine band just above the top seam of Limestone. Unfortunately, it is now very difficult to find any portions of the Insect Bed which yield any fossils, for the most important of these were found where the bed thickened out on the foreshore of Thorness Bay, but this extension of the deposit has in recent years been entirely washed away by the sea. Should the student come across any masses of the Insect Limestone thicker than usual and showing traces of fossil shells, it is possible that insect remains may be contained in the block of stone—it should be broken in pieces with a hammer and the fractured surfaces carefully examined with a lens.

A good section of Bembridge Marls is seen in the cliff on the east side of Thorness Bay, the entire extent of the Marls being exposed from the Marine Band upwards to the base of the Hamstead series, although in places the strata are obscured by vegetation and landslips. Beds of soft limestone and laminated marls and clays crowded with shells of estuarine *Mollusca* are seen along the shore, while higher up on the sloping cliff plenty of shells of *Paludina lenta*, *Cyrena semistriata*, and *C. obovata*, &c., may be found weathered out and hardened by exposure to the air. At the summit of the cliff, and just beneath the capping of Plateau Gravel, a dark band of carbonaceous clay may be found—this is the Black Band at the base of the Hamstead Beds, the remainder of which formation has, of course, been removed from here by denudation in past ages. At this place the Bembridge Marls have a thickness of about 70 feet, and are exposed in a way very convenient for investigation.

We pass on across the alluvial flats in Thorness Bay, and in doing so the student may keep a sharp look-out on the shore for the harder fossils—shells of *Cerithium*, and bones and plates of *Turtles*, *Alligators*, &c., washed out from the clays, are often to be found amongst the shingle on the beach. The Bembridge Limestone,

having passed beneath the sea at Sticelett Ledge, does not rise to the shore-level again until Saltmead Ledge is reached, and in the cliffs on the western side of the Bay—below Burnt Wood and Thorness Wood—excellent sections of the Bembridge Marls may again be seen. Some of the beds in the lower parts of the cliff will be found to contain myriads of shells of *Mollusca* of estuarine origin, many of them being perfect, but also comminuted to form bands of white shell-marl. Fish remains, in the form of bones and vertebrae, are numerous on one or two horizons, and from one bed in particular—a band of grey, shelly marl on the foreshore below Thorness Wood—some splendid remains of *Trionyx* and other *Chelonians* have been obtained. The beds rise up slowly to the westward, and we notice, in due time, deposits of dark clay on the shore crowded with fossils—this stratum represents the marine band of the series. Proceeding to the westward, the upper seam of Bembridge Limestone appears in the low cliff—it is here a dark-grey, soft, earthy stone and the shells of *Limnea longiscata* are perfectly preserved; in all other localities the shells appear in the Limestone in the form of casts. Further along we lose all traces of the Marls, and the lower beds of Limestone gradually rise up in a gentle undulation, bringing up beneath them the red and mottled clays of the Osborne series.

Passing across the entrance to Newtown River, we enter on an examination of the classical sections exposed in the cliffs at Hamstead, and the diagram shown in Plate III. will probably assist the reader to understand the geology of this world-renowned locality. At the western end of Hamstead Duvver (or Dover) the low cliff reveals three bands of Bembridge Limestone inclining sharply to the west, and shows the influence of a strong undulation at right angles to the main syncline. The Limestone stretches away to sea in the form of the Hamstead Ledge, and does not come to the surface again until Yarmouth is reached. Thus, undulation brought the upper beds down to a lower level, and the denudation into the valleys of the Newtown River and Western Yar on either hand has preserved for us the splendid series of strata overlying the Bembridge Marls, and known as the Hamstead Beds—the highest Oligocene formation to be met with in the United Kingdom. In order to make a thorough examination of the entire extent of the Bembridge Marls the student should, on a falling tide, work westward along the shore below the eastern part of Hamstead Cliff. The beds of marl and laminated clay teem with fossils and plenty of beautiful specimens may be secured. The fauna is of a fluviatile character, and in the shingle on the beach turtle plates, reptilian, and mammalian bones may often be found.

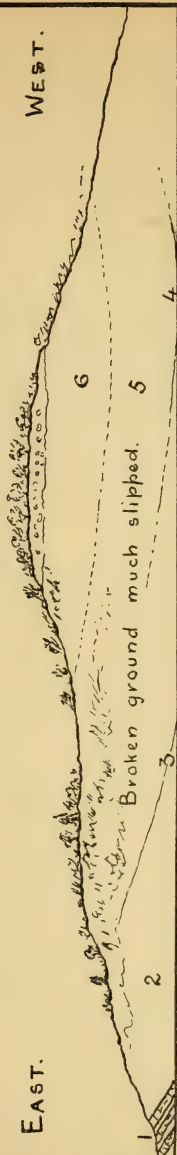
At low water it should not be difficult for the student to locate the Black Band at the base of the Hamstead Series; it is a bed of very dark-brown, or black, carbonaceous clay, somewhat less than two feet in thickness, which crosses the foreshore some distance along the coast. There are several beds of Clay crowded with *Paludina*

lenta underlying the Black Band, and these should assist the student to identify this horizon. Above the Black Band the Hamstead Beds here measure about 255 feet, and are divided into the Lower (lacustrine and estuarine) and Upper (marine) Beds—the latter being about 32 feet in thickness. Having located the Black Band we pursue our way westward, and with reasonable luck we shall be finding, *en route*, fossil bones of various kinds among the shingle of the beach; the clays in the low cliff bordering high-water mark, and out on the foreshore, will also be examined. As the erosion of the clay cliff by wind and rain is so much more rapid than erosion by the sea, the cliff is seen to slope back at a low angle and the strata are much obscured by landslips and by growths of brushwood. After a period of wet weather the student must be cautious in attempting to ascend the cliff, as the clays are treacherous, and the careless wayfarer may become unpleasantly “bogged” in the slimy and adhesive talus.

We pass on until we reach a mass of clay projecting below high-water mark; this is the foot of a mud glacier, formed by the converging of several streams of liquid mud and rainwash, which, in winter time, descend gradually towards the sea, and showing a peculiar and somewhat rare example of erosion of the land. Here, if the weather has been dry, we may work our way up the cliff and examine the sections where the strata are exposed. The freshwater beds extend for some distance upwards, and are succeeded by the marine deposits. The latter will be found to consist of hard clays crowded with fossils, and an abundance of specimens in a perfect state of preservation may be collected. *Corbula pisum* and *C. elegans* are beautiful little bivalves, and two of the seams of shelly clay contain plenty of *Cerithium plicatum*, *Melania inflata*, &c. Quite at the top of the cliff is a bed of hard, bluish clay containing some seams of oysters—*Ostrea callifera*—having the distinction of being the highest of our Oligocene fossils. Good specimens may easily be collected, and when walking about on the talus the student should search for fossils washed out of the clays and hardened by exposure to the air—plenty of such can be found. We proceed along the foreshore to the westward and soon come to a series of most interesting beds of hard, shelly clay and marl—the White Band. Some time may here be spent as this horizon should well repay careful research. The beds will be found to be tilted at a high angle, due to the weight of the slipping and foundering cliff. Some lenticular masses of marl occur in the White Band and contain many seeds of *Charae* and *Carpolithes*, &c. We have here the central curve of the undulation, and passing along to the westward we cross the beds in ascending order and again see the marls, &c., of the lower part of the series. Beyond Bouldnor there is not much work to be done, as the Black Band and its accompanying seams of shells, which one could formerly see on the foreshore near Yarmouth Common, has in recent years either been eroded away or covered up by accumulations

CLIFF SECTION - HAMSTEAD.

(NOT DRAWN TO SCALE.)



- | | | | | |
|-----------------|---|----------------|---|--|
| UPPER OLIGOCENE | { | Bembridge Beds | { | 1 Bembridge Limestone of Hamstead Ledge. |
| | | Hamstead Beds | | 2 Bembridge Marls. |
| | | | { | 3 Black Band on beach. |
| | | | | 4 White Band on beach. |
| | | | | 5 Estuarine Marls. |
| | | | | 6 Marine Beds |

Plateau Gravel at top of Cliff.

of shore deposits. The Bembridge Marls are obscured here by sea-walls and by the buildings of the town of Yarmouth, and we cross the estuary of the Western Yar before any workable sections can be seen.

The Black Rock, only visible at low water, lying off Norton, is a remnant of a ledge of Bembridge Limestone; this deposit rises sharply up into the cliffs, which soon attain an elevation at Sconce Point of nearly 100 feet. The section is, however, much obscured by slipping and by vegetation, and many places, where geological work might formerly have been done, are now enclosed and are not accessible.

The Osborne Beds occupy the greater portion of the cliff at Sconce, and, being influenced by the nearer proximity to the area where the great upheaving forces were most violently expended, we find these beds, and the other Oligocene strata, occupying relatively more elevated positions than they occur in at the eastern end of the Island. The Bembridge Limestone, for instance, is at sea-level at Bembridge Ledge, while it is at the top of the cliff at Sconce Point, and on the summit of Headdon Hill it attains an elevation of about 200 feet. The Upper, Middle, and Lower Headdon Beds are thus found to occupy convenient positions in the cliffs in Colwell and Totland Bays, where it may be noticed that all the higher strata have been removed by denudation. It will, of course, be seen that the coast is now trending southward, so that, until we reach the Chalk, we shall be passing along a line giving a true section of the strata at about right angles to the axis of elevation, but it is necessary to allow for the contours of the coast-line in estimating the true dip of the strata. It will be noticed that the Headdon Beds (in common with the rest of the Oligocene deposits) are liable to great variations, and it is often difficult, even for the Geologist who is accustomed to work in these sections, to correctly correlate the strata at their different outcrops. Here, at the western end of the Island, the Headdon series is much more extensive and is richer in fossils than at Whitecliff Bay, and we find several thick beds of freshwater limestone, crowded with fossils, at horizons where, at the other end of the Island, only thin seams of marl occur. At the northern end of Colwell Bay the upper portion of the Headdon Beds is hidden by the sea-wall and by landslips, but along the cliffs we have a splendid section of the Middle Headdon Beds, and here the student will doubtless linger to collect the beautifully-preserved fossils—partly marine and estuarine—contained in the sandy clays. Blocks of the How Ledge Limestone lie on the beach, and at low-water the beds can generally be examined *in situ* and traced to Warden Ledge. They are full of fossils, and there should be no difficulty in obtaining plenty of excellent specimens. In Totland Bay this Limestone rises up into the cliff and passes inland, but is correlated with a conspicuous bed occurring further south at Headdon Hill. The cliffs in Totland Bay are a good deal obscured by land-

slips and are much overgrown, but they show a section of the Lower Headon Beds of estuarine origin, and, if time should permit, they may be examined, although better sections are seen at Headon Hill. At the south end of Totland Bay the coast runs almost east and west, so that the true dip of the strata is not so clearly seen, but we have here a fine exposure of the entire Headon Series. The whole cliff at Headon Hill is much affected by the slipping of the different beds, and the foreshore round Heatherwood Point is encumbered by masses of limestone, from several horizons, fallen to the beach. In the higher part of the Upper Headon Beds there is a thick seam of cream-coloured Limnean Limestone, and it forms a conspicuous feature in the face of the cliff. Two other bands of Limestone, of less thickness, occur in the Lower Beds and the marine clays occupy the intermediate position. Towards the top of Headon Hill are the Osborne Beds, and above these an outlier of Bembridge Limestone—the latter being here of a very hard, tufaceous nature. The exposures of these last two deposits are partly obscured by slipping, and by the Plateau Gravels which cap the Hill. The entire sections at Headon Hill have long attracted the attention of Geologists, and enjoy a world-wide reputation for the beauty and abundance of the fossils they yield, and for the interesting light they throw on the life-history of a remote past.

We pass on towards Alum Bay, and there notice the sudden rising up of the strata; by referring to the diagram shown on Plate IV. the reader will be able, by comparing it with the illustration of the section at Whitecliff, to understand how differently the various deposits are developed at the western end of the Island, and will also be enabled to identify the several beds as seen in this most favoured locality. The Headon Hill Sands (formerly largely exported for use in glass works) occur in the lower part of the cliff to the north of the pier, and are followed by the Barton Beds of about 250 feet in thickness. Some of the marine fossils may be collected from the cliff just to the south of Alum Chine. Following these strata (which have now assumed quite a vertical position in the cliff) are the Bracklesham Beds, the base of which is usually regarded as being the band of pebbles seen in the cliff about 150 feet from the bottom of the Barton Series. The Bracklesham Beds here (as at Whitecliff Bay where, however, they are a much thicker deposit) yield a marine fauna, and at two or three places the fossils are fairly numerous. For 662 feet the Lower Bagshot Beds are seen—here assuming the form of many-coloured sands, for which Alum Bay has long been justly famous. At about the middle of the Sands occurs a band of pipe-clay (not, however, always exposed) which has yielded an extensive series of fossil leaves and plant-remains of great beauty. Below the Sands is the London Clay, resting—as at Whitecliff Bay—on the deep-red clay of the Woolwich and Reading Beds, and these in their turn overlie the Upper Chalk at the south end of Alum Bay. Here the surface of the Chalk at its

CLIFF SECTION - HEADON HILL AND ALUM BAY. —

(NOT DRAWN TO SCALE.)

NORTH.

SOUTH.



1. Chalk of Needles Down.
2. Woolwich and Reading Beds.

2. Woolwich and Reading Beds.

3. London Clay.

4. Lower Bagshot Beds.

5. Bracklesham Beds.

6. Barton Beds.

7. Headon Hill Sands.

8. Lower Headon Beds.

9 Middle Headon Beds.

10. Upper Headdon Beds.

11. Osborne Beds.

12. Bembridge Limestone and Marls.

13. Plateau Gravels :

FOCENE.

OLIGOCENE.

G. W. C.

junction with the oldest of the Eocene Beds will be found to be very irregular, and to bear clear evidence of having been subjected either to erosion by the waves of the sea in which the red clay was deposited or to denudation as an ancient land surface.

GEOLOGY OF THE INLAND PARTS OF THE ISLAND.—We have now completed the circuit of the coast-line, and it will be advisable to take a hasty glance at the chief features of geological interest in the interior of the Island. Dealing first with the land lying to the north of the central range of Chalk Downs, it will be found that the vertical Eocene Beds follow a line in close proximity to the Downs; and that the hills in the northern area are chiefly composed of deposits of Oligocene age. The Hamstead Beds extend over a great part of the district, and, having been cut through by denudation, the underlying beds of the older Oligocene periods crop out along the sides and floors of the valleys. These clays and marls form, as a rule, a subsoil of a poorly-fertile character, and the visitor, standing on one of the Chalk Downs and looking northward across the landscape, cannot fail to notice that an extensive acreage is devoted to woodlands and the growing of copses.

On the southern part of the Island the soil of the Lower Greensand is far more fertile, and much of the land is arable—the ferruginous nature of the subsoil being clearly shown in the deep-red and brown colour of the fields when newly ploughed. The Wealden Beds only occupy two narrow strips of surface, extending but a short distance inland from their two outcrops along the south-west coast and in Sandown Bay, so that nearly the whole of the central valley has the benefit of the light and rich subsoil to be found over the Lower Greensand.

Ascending the southern slopes of the central range of Chalk Downs, one, of course, passes across the outcrop of the Gault—generally much slipped—and then the Upper Greensand. The Chert beds, at their high angle of dip, and from their greater hardness, are, in places, formed into a subsidiary range of elevations running parallel to the Downs—this is well seen at Bembridge, Ashey, and Mersley Downs.

All the hills in the northern half of the Island are capped by extensive sheets of Plateau-Gravels—chips on the floor of Nature's workshop—bearing eloquent testimony to the immense extent of the denudation which removed the great arch of the anticlines. The gravels are simply the accumulations of the harder particles which were contained in the strata—three thousand feet thick—forming at one time the continuations of the beds as we now see them, and extending over all the middle part of the Island. The Plateau-Gravels have, in many cases, been cut through and redeposited in the form of later Valley-Gravels by the action of rivers and streams, past and present. Brick-earths, too, owe their origin to the effects of denudation, and they form extensive deposits in many parts.

In the Valley-Gravels palaeolithic implements have been found, and Brick-earths, &c., yield neolithic implements both chipped and polished. The gravels occur at elevations varying from 350 feet at St. George's Down to sea level at the Foreland, so that it is almost impossible, in some cases, to determine whether re-deposition has taken place or not, especially as palaeolithic worked flints have hitherto been singularly scarce. It has been recently reported, however, that the gravel at Nodes Point has yielded many implements of palaeolithic types, so that it may be assumed that here, at all events, we have a valley-gravel, and, on the same reasoning, the gravels at the Foreland were also probably re-deposited.

With such splendid sections open to him along our coast-lines it is probable that the student will not attempt much work in the inland parts of the Island. Space does not permit any detailed descriptions of the inland sections to be given, and it may be sufficient to mention that the numerous Chalk-pits on our Downs enable work to be done in several of the fossiliferous zones of the Chalk; while north of the Downs some interesting sections are available in brick-yards where clay is dug in Eocene or Oligocene beds for brick manufacture. The finest of these latter sections is that at the large works at Gunville, where Barton and Bracklesham clays are worked, and also the mottled clay of the Osborne Beds.

From an industrial point of view the strata of the Island are interesting. The Bembridge Limestone, in Norman times and in the Middle Ages, was in much request as building stone, and extensive quarries existed at Quarr and Binstead, whence the stone was shipped across to the mainland and was much used in the construction of the various religious edifices in the southern part of England. For several centuries it formed the chief building stone used for all local purposes, and was obtained also at Dodpits, Wellow, &c., in the western part of the Island. All the quarries are now practically abandoned, and the stone is replaced by the cheaper and more easily handled, though less picturesque, common red brick. For the making of this latter object the Tertiary clays and the various brick-earths are well suited, and a successful industry is carried on.

Combined with Chalk from Pan Down the Tertiary clays are manufactured into cement of excellent quality at the Medina Mills, and the product is thence shipped to all parts of the world. Building stone is extensively quarried from the beds of rock in the Upper Greensand along their outcrops on the sides of the southern range of hills, and the building material thus obtained is of a first-rate and durable character.

It is sufficient to note in passing that most of the towns in the Island enjoy abundant water-supplies of excellent quality, chiefly obtained from deep borings carried down into some of the many water-bearing strata. The purity of the water so obtained is a

benefit of inestimable advantage to the public, and it is due to the varied character of the strata that difficulties in obtaining these supplies are much less serious than in many less favoured localities.

SYNOPSIS OF AVAILABLE SECTIONS.—Before passing to the final stage of our subject it may be useful to classify, from a stratigraphical point of view, the several cliff sections, &c., where the student may be afforded the best opportunity of studying the various deposits. The following may be selected as being the most instructive, and as areas where the most profitable work may be done :—

SECONDARY STRATA.

WEALDEN BEDS: Compton Bay, Brook, and the coast to Atherfield Point; cliffs north of Sandown.

LOWER GREENSAND: Compton Bay; the coast from Atherfield Point to Ladder Chine; cliffs from Luccombe to Shanklin.

GAULT: Compton Bay and near Culver Cliff.

UPPER GREENSAND: The Undercliff; Cripple Path; sections among the fallen masses of rock along the lower cliff between Niton and Ventnor; the quarries at Ventnor and near Luccombe; Culver Cliff.

CHALK: Scratchells Bay; Alum Bay; Culver Cliff and Whitecliff. Inland Chalk-pit sections at Pan and near Nunnery, Newport; Down End and Brading Down.

TERTIARY STRATA.

EOCENE: Whitecliff Bay and Alum Bay.

OLIGOCENE: HEADON BEDS—at Whitecliff Bay, Colwell and Totland Bays, and at Headon Hill. OSBORNE BEDS—on the foreshore just west of Wootton Creek, and at Headon Hill. BEMBRIDGE LIMESTONE—at Whitecliff Bay, St. Helens, and Sticelett Ledge, Thorness Bay, and summit of Headon Hill. BEMBRIDGE MARLS—at Whitecliff Bay, St. Helens, Thorness Bay, and Hamstead Cliff. HAMSTEAD BEDS—at Hamstead and Bouldnor Cliffs.

PLEISTOCENE.

PLATEAU GRAVELS: Pits on St. George's Down, and at the Cliff sections on the north-west coast of the Island. VALLEY GRAVELS: Foreland and Noddes Point; cappings on cliffs from Compton Bay to Blackgang, and at Freshwater Gate.

A FEW PRACTICAL HINTS.—Before concluding this paper a few suggestions of a practical nature may be of assistance. For work in the Secondary Rocks a good pick-hammer is required, and a chisel

is also of service. For dealing with all the clays and marls a stout knife of some kind is very useful, and it is hardly necessary to point out that for carrying the Eocene and Oligocene fossils (many of them are frail and delicate) a supply of cardboard or chip boxes with cotton wool is needed. The kind of bag, or basket, carried by the student must be a matter of choice for each individual. Many of the small Oligocene shells are difficult to extract in the field; portions of the clay can be taken home, dried, scalded, and washed; the shells, &c., can then be dried and easily assorted. It is most necessary that a tide-table should be obtained, and that work should be undertaken on a falling tide. At many places the cliffs cannot be passed at high water, and on the north coast of the Island some of the more important beds are best seen on the foreshore between tide-marks. Given the time of high water at Portsmouth, the student can work out a "tidal constant"—by deducting the times given for the following places: Ryde 0·21, Bembridge 0·21, Cowes 1·26, Yarmouth 1·41, Needles 1·55, Rocken End 1·0. On the outside of the Island the durations of the ebb and flow are nearly equal—being about six and a quarter hours each; inside the Solent the duration of the ebb is about five and a quarter hours, and of the flow about seven and a quarter hours.

GENERAL CONCLUSIONS.—From these few pages much matter of interest to the Geologist has necessarily been omitted, but it is to be hoped that those omissions do not detract entirely from the value of this outline of the Geology of the Isle of Wight. One may trust that the student will find this sketch of some use to him when pursuing his work along the coast of our fair Island; he, at all events, will admit, from what has already been written, that here he may find a range of strata placed ready for his examination in a way which cannot fail to deeply impress him. At no other locality in the world, of equal size to the Isle of Wight, can a finer or more varied series of fossiliferous deposits be found, and, after he has spent some profitable days pursuing his work among our cliff sections, the student will readily understand why the Island is to the Geologist a classical field for research.

Should these few pages induce some of those, whose acquaintance with the science has been small, to enter upon a pursuit of this most engrossing study, then this rough outline of the subject will indeed have performed a useful service. Nature's book lies open ready for us all to see and peruse, but few pause to listen to her marvellous teachings. To turn over the pages of Nature's luminous manuscript, and to decipher the words of her beautiful and poetical truths—set high above all human controversies—is indeed to obtain some insight into the history of the wondrous past, and to learn therefrom to correctly appreciate the beauties of the equally wondrous present.

EARTHQUAKES.

By PROFESSOR JOHN MILNE, D.Sc., F.R.S.

ABOUT 1840, in Central Perthshire, earthquake shocks were fairly common occurrences, but at the present time we cannot say that in Great Britain earthquakes are frequent. The greatest number seem to have been recorded in the Lowlands of Scotland, along the line of the Caledonian Canal, in the hills which divide Lancashire from Yorkshire, the Severn Valley, and in Cornwall and Devon. To this list we may add the County of Sussex. Certain of the earthquakes which have shaken this latter county reached the Isle of Wight. At the present time the Island itself does not produce earthquakes.

As is well known, seismic disturbances occur when rocky strata are suddenly fractured, or when a line of fracture is extended. Practically all British earthquakes can be traced to adjustments on well-known faults, and although the Secondary strata in the Isle of Wight are considerably folded, faults are scarce—that is to say, the strata have been bent without suffering fracture. There has been a plastic-like yielding, and to this we may attribute the absence of earthquakes. The faults which have been observed in the Chalk in the Isle of Wight, and in the overlying Tertiary up to the Hampstead beds which have shared its movements, are in all probability the natural records of earthquakes of considerable magnitude. They took place in past geological time. In the pages of history, however, we find that although the Island is, at present, so exceptionally stable, it has, nevertheless, on one or two occasions been roughly shaken.

In a volume entitled “A General Chronological History of the Air, &c.,” published in 1749, we read that in A.D. 68, the Isle of Wight was shaken, and this was accompanied by an inundation. The next shaking of which we have record took place on November 5, 1734. In the “Philosophical Transactions of the Royal Society,” Vol. 46, and in other works, we find an account of the earthquakes of February 19 and 29, 1750. These were experienced over a wide

extent of the south of England. In London several chimneys fell, and the movement was felt in the Isle of Wight. On November 1, 1755, the terrible earthquake of Lisbon took place. The movement from this caused the water in every lake and pond in Britain to oscillate to and fro, and we may assume that similar phenomena were observed in the Isle of Wight.

Following this world-shaking disturbance, earthquakes seem to have been felt in the Isle of Wight on Nov. 30, 1811, Dec. 6, 1814, Dec. 6, 1824, Jan. 23 and Aug. 27, 1834, and again on the 1st April, 1853. This latter shock extended from England to France and shook an area of 20,000 miles. On Oct. 6, 1863, at 3.22 a.m., the Isle of Wight, together with the South of England, was again shaken. The Deputy Governor of the Island, Mr. T. B. H. Cochrane, who at the time was at Quarr Abbey, tells me the motion was sufficiently strong to ring all the bells in the house. We have also notes of earthquakes which were felt on April 22, 1884, and May 29, 1889. The first of these was the well-known earthquake which was felt very severely in Essex. In 24 parishes near Colchester 1213 buildings were injured, besides 20 churches and 11 chapels. The latter shock apparently had its origin in the Channel Islands.

Although a few of the earthquakes which have shaken this Island originated in or near the Channel Islands, the greater number, apparently, came from the vicinity of Chichester. The number recorded for Chichester for a period of 240 years has been 18. Between the 11th and 19th centuries, for the whole of Great Britain, Mallett gives us a list of 234. The greater number of these took place during the winter months. All the earthquakes we have here referred to are those which have been *felt*, and in many instances caused structural damage.

It is now a well-known fact that a very large earthquake occurring in any one part of the world may be recorded in any other portion of the same. At the village of Shide there is a small observatory at which such records are made. Every year about 130 earthquakes are noted, and 60 of these have disturbed the whole surface of our world.

AN ACCOUNT OF DISCOVERIES OF PALAEOLITHIC IMPLEMENTS IN THE ISLE OF WIGHT.

By **RONALD W. POULTON**, Balliol College, Oxford.

IT is only during the past few years that important discoveries of Palaeolithic implements have been made in the Island. In the "Geological Survey of the Isle of Wight," published in 1889, mention is made of an implement found at Howgate Farm, near the Foreland, by Mr. Codrington, "as the only one yet found in the Isle of Wight." As a matter of fact, Prof. E. B. Poulton, F.R.S., found two worn specimens, in 1886 and 1888, on the beach in Seaview and Priory Bays.

During the last few years, however, Palaeolithic finds have been fairly numerous. Three definite localities are known, and it is possible to ascribe the source of every implement as yet found to one of these.

These three localities are the stratified gravels which cap the cliffs at the Foreland, on the West High Down at Freshwater, and in Priory Bay on the north-east coast.

At the Foreland the deposit of gravel is of great interest. The main mass consists of rounded chalk flints imbedded in sand, and distinctly stratified. This shingly gravel thins suddenly towards the south, and is overlain by 36 feet of brick-earth, containing a few seams of small angular flints; among some flints derived from it, at a height of about 80 feet above the mean sea level, Mr. Codrington found a neatly-chipped ovate implement. Its surface is lustrous and partly whitened and its angles and edges are sharp and unabraded.* Two ovate water-worn specimens have been found

* For further details see T. Codrington, "Quart. Jour. Geol. Soc.," Vol. xxvi. (1870), p. 542; and Sir John Evans' "Ancient Stone Implements of Great Britain," 2nd ed. (1897), p. 626 (also containing reference to Prof. Poulton's original discovery), and fig. 467, p. 627.

on the shore at Bembridge, and a thick, pointed implement was picked up on the beach between the flagstaff at Bembridge Point and the Ferry. Of late years the under-cliff at the Foreland has been largely covered by brambles and bushes, and it is extremely difficult to penetrate to the face itself. The locality has often been searched, but with no further success. It is, however, such a suggestive-looking bed of gravel that I am quite convinced that further finds will be made. The three water-worn specimens mentioned above almost certainly came from this place, though, owing to the drift of the tide, they had been carried some distance along the shore.

The second locality mentioned above is the gravel deposit capping the West High Down at Freshwater.

Mr. S. Hazzledine Warren, F.G.S., while taking a walk over the down near Freshwater Bay in May, 1899, picked up a small Palaeolithic implement on some ground which had recently been ploughed up by a traction engine. It was ovate in form, about three inches long, thin, and well-made, though not elaborately finished.

The same gentleman, being convinced that this specimen had been turned up on the spot, obtained permission to dig further. Three sections were taken, the first of which I will give as described.

	<i>Feet.</i>	<i>Inches.</i>
" 4.—Surface soil	1	0
3.—Loam, with stones, similar to those in layer below	0	6-9
2.—Layer of stones, composed of flint nodules fractured; unabraded, whitened flints; fractured, red-stained, scratched, abraded flints; Tertiary flint pebbles and iron-stone; and Palaeolithic implements ...	0	3
(1A.—In places, over an area of 1 to 3 square feet, the stained and scratched flints were found in the yellow clay below the layer of stones. Here implements were most abundant, the flakes sometimes almost touching one another.)		
1.—Yellow clay, with yellowish-white, fractured flints and some Tertiary flint pebbles and ironstone Seen to	1	9
	3	6 "

In the layer marked No. 2, Mr. Warren found a great number of implements, cores, and flakes.

The implements are generally abraded, sometimes only very slightly, but often to a considerable extent. Many of them are

much altered and corroded, and rough and unpleasant to the touch. They are stained either a dirty reddish-brown or yellow colour, and are often very blotchy in appearance. The corroded examples nearly always bear evidence of having been twice abraded: once before, and again after, they received their ochreous patina. The majority of the specimens were found about 2 feet below the surface, but several were dug out at a depth of 3 feet, and one at 3 feet 6 inches.

Mr. Warren has also found implements in the gravels of the Western Yar and in a patch of gravel on the other side of Freshwater Gate. There appear to be numerous terraces of river gravels in this part, which would probably repay investigation.*

The locality, however, which has yielded the most plentiful traces of Palaeolithic man, is a large gravel section, close to the sea, at the south end of Priory Bay, on the north-east coast of the Isle of Wight. The gravel face is about 12 feet high (including overlying earth) and 120 yards long. It rests on the Bembridge Clays. On both sides trees and shrubs effectively limit the field of search. The gravel is clearly stratified, and includes several bands of gravelly clay. Many of the implements must have been buried in these bands, and it is to this cause that we owe the almost perfect preservation of so many of the specimens. The top of the cliff is 120 feet above sea-level (by aneroid), and the ground slopes rapidly, and in some places precipitously, down to a sea-wall, which stands 12 feet above the shore. The coast in this part of the Island is gradually slipping into the sea, and, yearly, tons of the blue clay, in which stones and sometimes precious implements are embedded, find their way over the sea-wall on to the sands.

Within the last five years, however, a fort has been built above the gravel face, and strenuous efforts have been made to stop the gradual wasting of the clay. The most successful method adopted is to plant young trees and grass over the slopes; and this, though it may prevent the land from slipping, will very soon hide the surface of the gravel and prevent all future search.

Implements are found in this section, and on the surface of the clay beneath. They are also found, scattered, on the shore in the north of Priory Bay and even in Seaview Bay.

The first implement found in this locality was picked up by Prof. E. B. Poulton, F.R.S., on the shore in Seaview Bay in 1886. A small, less worn specimen was also found by him in 1888 in Priory Bay to the east of Horestone Point. No further discoveries were made for many years, and it was not till 1897 that the next specimen was found in Seaview Bay by Miss Moseley. In April,

* For further details see Mr. S. H. Warren's most interesting paper, "Palaeolithic Implements, I. of W.," "Geol. Mag.," Decade iv., Vol. vii., No. 435, p. 406.

1902, several implements were found by her in the gravel falls below the cliff face in Priory Bay, and in June, 1902, the same observer found a roughish type *in situ* in the cliff face. Thus, step by step, the implements were traced to their source.

At a later period a fine, unworn implement was found *in situ*, and also many interesting flakes and worked flints were picked out of the gravel face.

With a view to determining whether there were any implements to be found on the beach below the sea-wall, many visits were made in April and August, 1904. These visits were entirely successful, and the finds were so plentiful that in August of that year sometimes as many as seven were collected in one day. The search has continued during many months up to the present time, and a large collection has been made.

The fact that the implements on the shore become very scattered is due to the prevalent set of the tides, which tends to wash the shingle to the north of Priory Bay, and even round the point into Seaview Bay.

So far, about 150 implements have been found, of which 106 were sufficiently interesting to be described.

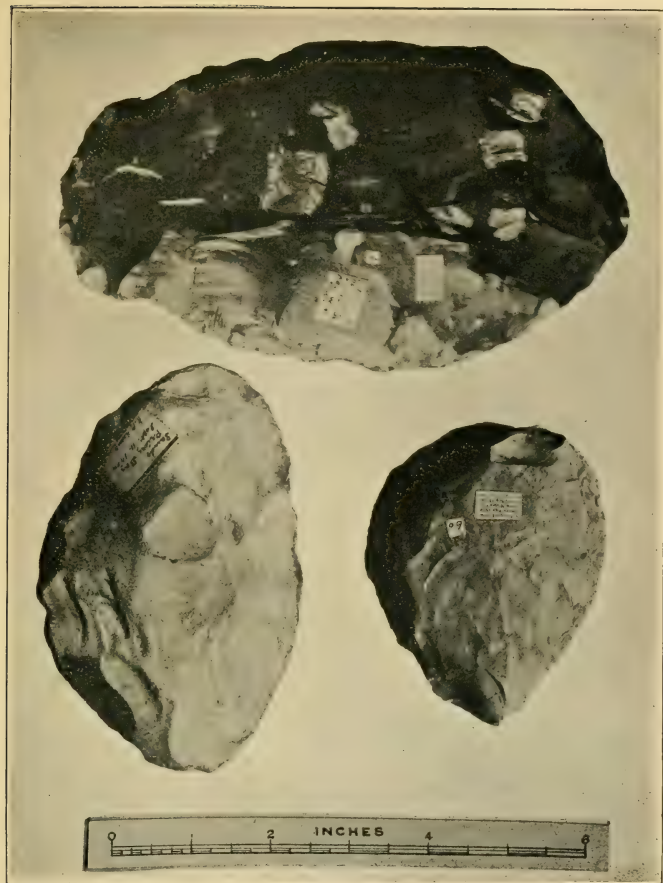
They are mostly of the oval and ovate types, a few of the ovate-lanceolate and perch-backed series, and several of irregular shapes. Those found at the section are mostly quite unworn, sharp, and unabraded. A few, however, are very much abraded, as if they had been worn in some former river bed. There are two or three specimens which are so perfectly chipped that they may not have been intended for everyday use, but perhaps for some ceremonial or official purpose.

Those found on the shore are usually more or less worn, some very slightly, but others so much so as to be almost unrecognisable.

The largest implement is $7\frac{1}{4}$ inches long, $4\frac{1}{4}$ broad, and $1\frac{1}{2}$ thick. The smallest is only $2\frac{1}{4}$ inches long, $1\frac{1}{2}$ broad, and $\frac{1}{2}$ thick. It is, however, an undoubted specimen, and is only slightly worn.

A great many have large pieces of the original crust still upon them. It was an advantage to the maker to find flints which needed the smallest amount of chipping to produce a cutting edge, for that was all that was required. In several, these patches of original skin obviously served as a smooth place, so that the flint might be comfortably used in the hand as a knife.

One implement has a large piece of original crust upon it, and this is still coloured perfectly white, through contact with the chalk. The nearest existing natural exposure of chalk is at Whitecliff Bay, some four miles distant, and it is very probable that flint was obtained in the neighbourhood for the manufacture of implements. Again, several large blocks of flint have been picked up at the section, which appear to be too large to have formed part of a river gravel, and which have more probably been brought from the chalk.

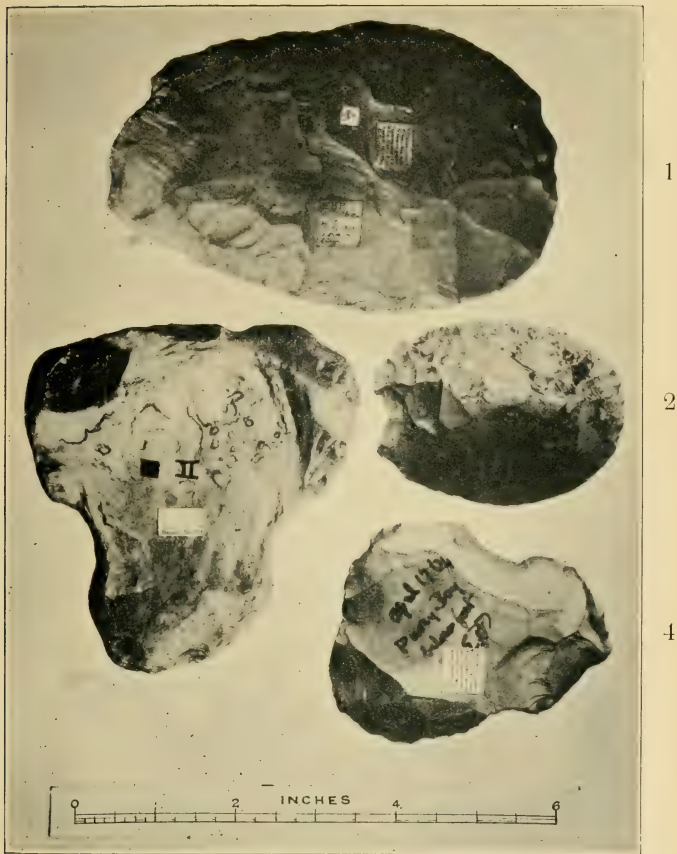


Alfred Robinson, photo.

All figures are about half natural size.

PALAEOLITHIC FLINT IMPLEMENTS FROM PRIORY BAY,
N.E. COAST OF THE ISLE OF WIGHT.

(For detailed description see page following List of Illustrations.)



Alfred Robinson, photo.

All figures are about half natural size.

PALAEOLITHIC FLINT IMPLEMENTS FROM PRIORY BAY,
N.E. COAST OF THE ISLE OF WIGHT.

(For detailed description see page following List of Illustrations.)

A few of the implements show signs of secondary chipping, and one or two have been almost entirely re-chipped from an older specimen. In some cases, too, circular cavities have been worn in the edge, as if by scraping some hard substance.

At the same time a very large collection of flakes has been made. Most of them are large flints, worn and abraded, and broadly flaked with a few rough blows; but several which have been found in the gravel bed are quite sharp and unworn. Two or three are thin, twisted, translucent plates of flint.

Among the mass of flints gathered at different times from the Bay are several triangular specimens which resemble one another in many particulars. They are, as a class, somewhat thin flat flakes, one side being usually struck off at a single blow. One edge of the triangle shows signs of having been sharpened, while in each of the other two edges there is a large notch. The notches, as a rule, show a distinct amount of wear over and above the rest of the surface of the flint. It is very probable that the two notches were used for fastening the instrument to some handle, while the sharpened edge was used for cutting. They seem to be quite a new form of implement.

A number of flints have been found which were obviously used in the hand as knives. In every case one end, or one side only, has been sharpened, the other end being left for use as a handle. Usually the implement is just a natural flint, with a few flakes struck off one end to form the sharpened edge.

At the same time, a great number of cores, wasters, hammer-stones, and roughly worked flints have been collected, perhaps indicating that there was a regular settlement or manufactory in this locality.

I have not been able to give more than a brief summary of the numerous interesting types of flints found in this bay, but the whole collection will be open for inspection in the Pitt Rivers Museum at Oxford at no distant date.

FUNGI.

By JOHN FREDERICK RAYNER,
Member of the British Mycological Society.

AMONG the various branches of botany, the study of the great sub-kingdom of Fungi is of singular interest, not only on account of the large size, fleshy substance, great diversity of shape and colour, and remarkable beauty of many of its members, but also for the unique character of their nature and life-history. Fungi are cryptogamic or flowerless plants, but they are distinguished as a class from all other plants, whether flowerless or flowering, by the absence of *chlorophyll*—essential to green vegetation's grand function of bridging over the inorganic and the organic, of forming out of the air the substances of which their living tissues are composed. Fungi cannot do this. Like animals, they can only live on material previously organised, whether living or dead; if the former, they are termed *parasitic* Fungi; if the latter, *saprophytic*.

Another special feature appertaining to Fungi is their edibility. On the Continent the wholesome qualities and palatable flavours of the edible Fungi are universally recognised, but in this country they are generally shunned or neglected, except by a comparatively small body of experts, for whose opinion, however, based as it is on experience, we would claim attention. Of course, the known fact that there is a number of more or less poisonous kinds excites repugnance or distrust of the whole class, when it should only suggest caution. It is a question of knowing what kinds to gather and what to avoid. This is not so great a task as may be supposed. It is true that one enthusiastic mycophagist has eaten upwards of 200 kinds, but if we eliminate those that are too scarce, or small, or tough, or tasteless, to be worthy our regard from a culinary standpoint, there remain some 30 or 40 edible Fungi to make the acquaintance of—surely not an insuperable undertaking. Moreover, there would probably be barely half this number available in any one district. They must, however, be studied individually; there is no

infallible sign by which an edible Fungus may be distinguished from a poisonous one. Taste and smell are some indication—if mild or mealy, good; if acrid or nauseous, bad. But their features generally must be distinguished, as we distinguish a rabbit's from a cat's. The text-books must be our guide.

The structure of Fungi, like that of higher plants, is divisible into their vegetative system, technically termed *mycelium*, and by gardeners called "spawn," (analogous to root, stem, and leaves), and their reproductive system, generally known as the *sporophore* (equivalent to the flower and floral organs). The mycelium, being concerned with obtaining and assimilating food, is usually hidden in the ground or other substratum where its nourishment is found, whereas the sporophore—which bears the spores, the minute, dust-like bodies from which Fungi originate, as flowering plants originate from seeds—appears in the air, and is in most cases the only visible part of the Fungus. Thus, when we gather a mushroom, we take only the fruiting apparatus of *Agaricus campestris*; the plant itself, a mass of thin, whitish, intermingled threads, is left behind, to produce, in due course, succeeding crops of mushrooms.

Fungi vary in the form and arrangement of their different parts perhaps more than any of the other great classes into which the Vegetable Kingdom is divided. According to the latest census, 5200 species have been found in this country, or nearly three times as many as our flowering plants, about half being microscopic: "smuts," moulds, mildews, &c.; and these are being added to almost daily. To give anything like an adequate idea, even in outline, of the classification of this vast assemblage, would greatly exceed our limits of space, but the chief points of distinction are indicated in their proper places in the subjoined list; we must again refer the student to the text-books.

Foremost in the mycologist's library must come the four volumes of Massee's "British Fungus-Flora." It is, unfortunately, incomplete, but includes very nearly all the larger kinds. Dr. Cooke's "Handbook" is the only mycological work in English professing to cover the whole ground, but it is now 40 years old. The little "Microscopic Fungi" of the same author gives a readable account of the minute parasitic "leaf fungi," but its nomenclature and classification are now obsolete; it has, however, Sowerby's useful figures. A companion volume, Cooke's "British Fungi," is still acceptable to those who approach the subject from the esculent point of view. A brief but suggestive outline of the study may be gleaned from a fourpenny *brochure* published at the South Kensington Natural History Museum, entitled "A Guide to Sowerby's Models of Fungi." Uniform with this is Lister's "Guide to British Mycetozoa," indispensable for the study of this group. Costantin & Dufour's "Nouvelle Flore des Champignons" is a pocket volume giving descriptions and figures of all the larger species. It is a remarkable feat of condensation, but

in practice perhaps only a partial success. The "Flore Mycologique" of Quélet is a more extensive work in the same language, much appreciated by some English mycologists; and the "Hymenomycetes Europei" of the illustrious Fries is still a standard work of reference. The latest word in our language on structure, life-history, and classification is Massee's "Text-book of Fungi," but it does not describe species. If access can be had to Cooke's magnificent "Illustrations," with its 1198 coloured plates of life-size figures, it will prove an immense help, but even the recently reduced price of twelve guineas is prohibitive to most of us.

It is a matter for regret that the Isle of Wight List, now presented (though incorporating the few names given in Venables' "Guide to the Isle of Wight," published in 1860, the only previous attempt in this direction, so far as can be ascertained) should be so meagre. There can be no doubt that it might have been largely amplified, had circumstances permitted. The Rev. W. L. W. Eyre, in his long and interesting "List of the Fungi of the Grange Park and Neighbourhood, Hampshire," says very truly, "A fair knowledge of the Cryptogamic Flora of any county or district is a work involving time and considerable experience. A long residence has afforded this opportunity. The various growths are so casual and short-lived in their appearance, very difficult to preserve, and exceptionally numerous, that no individual can do more, perhaps, than approximate to a full knowledge of so large a subject." We are not all so fortunately situated as the Rector of Swarraton, or pretend to rival his scientific acumen and experience. Our list must be regarded as preliminary merely, the publication of which, though premature in itself, will, it is hoped, be the means of evoking further research among Island naturalists, and of amassing large additions to the Island Fungus Flora, for the projected supplement to this Guide.

In concluding these prefatory remarks, I must echo Mr. Eyre's acknowledgment, that "this List owes very much to the kind assistance of the leading authorities," among whom I would especially name Miss A. Lorrain Smith, F.L.S.; Mr. Carleton Rea, B.C.L., M.A.; and Mr. Charles Crossland, F.L.S. To my colleagues, the Rev. H. M. Livens and Mr. Frank Morey, F.L.S., I am indebted for much help in collecting; indeed, but for the indefatigable zeal of the Editor of this volume, our list could not possibly have attained its present degree of amplitude.

LIST OF FUNGI FOUND IN THE ISLE OF WIGHT.

[The arrangement and nomenclature are mainly according to Masee's "British Fungus Flora," as far as that work extends; for the remaining families, the system adopted in Masee & Crossland's "Fungus Flora of Yorkshire"—by far the most extensive and complete work of its kind—is largely followed. The roman figures after localities indicate the month in which the species was noticed, but this is not to be taken as its sole time of appearing; only actual finds are recorded; the same remark applies, of course, to the localities themselves.]

BASIDIOMYCETES.

Spores borne on supports termed Basidia.

GASTEROMYCETES.

Spores enclosed till mature.

Scleroderma vulgare, *Fr.* Under trees, &c. Frequent.

Lycoperdon saccatum, *Vahl.* Edible. Amongst grass, Bowcombe, x.

L. gemmatum, *Batsch.* Edible. In grass on down near Godshill, x.

L. pyriforme, *Schaeff.* (Common Puff-ball). Edible. On the ground and on rotten wood in fields and woods. Frequent.

L. perlatum, *Pers.* Edible. In grass and on the ground in woods. Marvel Copse, x; Godshill, x; Pan Down, x; Sullens Copse, x; Apes Down, x, &c.

L. caelatum, *Bull.* Edible. In grass, on down near Godshill, x.

L. bovista, *L.* (Giant Puff-ball). Edible. On the ground in fields, &c. Nine Acres Meadow, Newport, viii; St. George's Down, ix.

L. depressum, *Bon.* In grass in open places. Frequent.

L. plumbeum, *Pers.* In grass, gravel pit, St. George's Down, x.

L. nigrescens, *Vitt.* In grass, Week Down, ix.

L. cepaeforme, *Bull.* In grass, Brighstone Down, vii.

L. pusillum, *Fr.* In moss, Apes Copse, x.

Geaster rufescens, *Pers.* (Earth-star). In grass near trees, Bowcombe, x.

G. mammosus, *Chev.* On hedge-bank, Burnt-house Lane, near Newport, i.

Ityphallus impudicus, *Fisch.* (Stink-horn). Edible. On the ground in woods, &c. Sandy bank, Dark Lane, Whitcombe, vi, x; Marvel Copse, vi, x; Luccombe.

Mutinus caninus, *Fr.* At base of mossy stump, Marvel Copse, x.

Clathrus cancellatus, *Tournef.* Discovered by Mr. Kippist in a copse at Appley, near Ryde; and occurs also in a wood near Shanklin (Venables). Occasionally found in damp pasture grounds at Old Park, in Pelham Woods, and at Steephill. It has also occurred near Ryde ("The Undercliff," by Dr. Martin, 1849).

PILACREAE.

A small and anomalous group, partaking somewhat of the characters of both the GASTEROMYCETES and the HYMENOMYCETES.

Pilacre Petersii, *B. & C.* On dead but standing trunk of Ash, Tolt Down, x.

HYMENOMYCETES.

Spores exposed before maturity.

TREMELLINEAE (*Jelly Fungi*).

Spore-surface even, covering the whole of the gelatinous sporophore.

Auricularia mesenterica, *Fr.* On trunks and stumps. Landslip, ii; Burnt-house Lane, vi; Knighton, vi; Brighstone, vii; Marvel Copse, x; Newport, x.

A. lobata, *Sommerf.* On stumps. St. Catherine's Down, ii; Bleak Down, vii; Brighstone Down, xi.

Hirneola auricula-judae, *Berk.* (Jew's Ear). On Elder and Elm. Gatcombe, iii; Newport, iii; St. Catherine's Down, v; Ashey Down, vi; Ventnor, vi; Foreland, vii; Garstons Farm, x; Landslip (Venables = *Evidia*).

Egidia glandulosa, *Fr.* On dead branches of Oak. Blackwater, x; Garstons Farm, x.

E. albida, *Brefeld.* On dead branches. Apes Copse, x; copse, Tolt Down, x; Dark Lane, Whitcombe, x.

Tremella frondosa, *Fr.* On decayed Oak trunks. Marvel Copse, iii; St George's Down, iii.

T. lutescens, *Pers.* On fallen branches, Apes Copse, x.

T. mesenterica, *Retz.* On dead branches, especially Furze. Parkhurst Forest, iii; Landslip, v; St. George's Down, v, x; Pan Down, vi; Blackwater, vi; wood, north of Shanklin, x; Newport, iii, x; roadside, Pan, iii.

T. intumescens, *Eng. Bot.* On dead branch of Oak, Parkhurst Forest, iii.

T. atrovirens, *Fr.* On dead branch of Furze, Pan Down, vi.

T. sarcoides, *Sm.* Conidial form of *Coryne sarcoides*. On old felled trunk, timber yard, Newport.

Naematelia nucleata, *Fr.* On decaying log, near Bleak Down, vii.

Tremellodon gelatinosum, *Pers.* Edible. On Pine stumps, Parkhurst Forest, iii, xi.

Dacryomyces deliquescens, *Duby.* On Pine wood. Frequent.

D. stillatus, *Nees.* On Pine and other wood. Frequent.

Calocera viscosa, *Fr.* On stumps. Parkhurst Forest, ix; pine wood, Bowcombe, x; St. George's Down, x; Beech Copse, Godshell, x; timber yard, Newport.

C. stricta, *Fr.* On dead branch, Parkhurst Forest, ix.

CLAVARIEAE (*Club and Coral Fungi*).

Spore-surface even, covering the whole of the erect sporophore.

Sparassis crispa, *Fr.* Edible. Near stump, pine wood, Bowcombe, x.

Clavaria fastigiata, *L.* Edible. Amongst grass, near Shanklin.

C. muscoides, *L.* Edible. Amongst grass. Apes Down, x; Combley Wood, x; Sullens Copse, x; Dark Lane, Whitcombe, x; Garstons, x.

C. coralloides, *L.* Edible. On the ground, Sullens Copse, x.

C. cinerea, *Bull.* Edible. On the ground in woods. Parkhurst Forest, ix; Marvel Copse, x; Apes Copse, x; Dark Lane, Whitcombe, x.

C. cristata, *Holmsk.* Edible. On the ground. Marvel Copse, x; Sullens Copse, x.

C. abietina, *Schum.* Under Pines, Marvel Copse.

C. rufa, *Fl. Dan.* In grass, near Shanklin.

C. dissipabilis, *Britz.* Edible. Amongst short grass. Pine wood, Bowcombe, x; Apes Down, x; Combley Wood, x; near Shanklin, x; St. Boniface Down, x.

C. luteoalba, *Rea.* In grass, near Newport, x.

C. vermicularis, *Scop.* Amongst short grass. Meadow near Marvel Copse; Apes Down, x.

Typhula erythropus, *Fr.* On petioles of dead Oak leaves, Combley Wood, x.

THELEPHOREAE (Leathery Fungi).

Spore-surface even, confined to one side of the horizontal sporophore.

Soppittiella sebacea, *Mass.* On foot of decayed post, Sullens Farm.

Peniophora quercina, *Cke.* On branches of Oak. Pan Down, vi; Apes Copse, x; Beech Copse, Godshill, x; wood, north of Shanklin, x; Merston, xi.

P. gigantea, *Mass.* On decaying stumps, &c. Marvel Copse, x; copse, Tolt Down, x; timber yard, Newport, x.

P. ochracea, *Mass.* On Oak stump, Arreton, i; on fallen branches, Tolt Down, x; on dead branch, Marvel Copse, iii.

P. cinerea, *Cke.* On bark and wood, especially Ash. Pan Down, vi; Apes Copse, x; Beech Copse, Godshill, x; wood, north of Shanklin, x.

P. velutina, *Cke.* On fallen branch, America Woods, x.

Hymenochaete rubiginosa, *Lév.* On post, Arreton Down, ii.

Corticium caeruleum, *Fr.* On gate-post, Sullens Farm, x.

Stereum hirsutum, *Fr.* On stumps, trunks, and branches. Common.

S. ochroleucum, *Fr.* On dead branches of Oak, Firestone Copse, viii.

S. purpureum, *Pers.* On wood, especially Furze and Birch. St. George's Down, iii; Sullens Copse, v; Blackwater, vi; Apes Copse, x.

S. rugosum, *Fr.* On trunks, &c. Combley Wood, vi; Parkhurst Forest, ix; Apes Copse, x; Godshill, x; wood, north of Shanklin, x.

Craterellus cornucopioides, *Pers.* Edible. On the ground, Combley Wood, x.

HYDNEAE (Hedgehog Fungi).

Spore-surface on spines or projections.

Hydnum repandum, *L.* Edible. On the ground under trees. Parkhurst Forest, ix, xi; pine wood, Bowcombe, x; Combley Wood, x.

Irpex obliquus, *Fr.* On dead branches. Combley Wood, x; America Woods, x.

Radulum orbiculare, *Fr.* On dead bark. America Woods, x; copse, Tolt Down, x.

Grandinia granulosa, *Fr.* On old trunk, timber yard, Newport.

POLYPOREAE (*Pore Fungi*).

Spore-surface lining tubes or depressions.

Merulius lacrymans, *Fr.* On decorticated Pine stump, sand pit, Marvel Copse, x; inside of cask, Shanklin, x; on trunk, timber yard, Newport, x.

Daedalea quercina, *Pers.* On stump, Parkhurst Forest, ix.

Trametes gibbosa, *Fr.* On stump of Beech, Carisbrooke, x.

Poria vaporaria, *Fr.* On dead branches. Combley Wood, vi, x; Parkhurst Forest, ix; Marvel Copse, x; Sullens Copse, x.

P. mollusca, *Fr.* On rotten branch, Parkhurst Forest, ix.

P. vulgaris, *Fr.* On old trunk, timber yard, Newport, x.

P. umbrina, *Fr.* On stump, Pan Down, x.

Polystictus perennis, *Fr.* On the ground, copse near Wootton Bridge, x.

P. versicolor, *Fr.* On trunks, stumps, branches, &c. Very common.

P. abietinus, *Fr.* On Pine stumps. Marvel Copse, vi; Parkhurst Forest, vi; Sainham Copse, Godshill, x.

Fomes ulmarius, *Fr.* On Elm stumps. Marvel Copse, iii, x, &c.; Froglands, Carisbrooke, x; Gatcombe, x.

F. fomentarius, *Fr.* On trunks. Appuldurcombe, ii; copse near Wootton Bridge, x.

F. igniarius, *Fr.* On trunk of Plum-tree, Newport, v, &c.; on stump of Cherry, St. Catherine's Down, viii.

F. vegetus, *Fr.* On Turkey Oak, garden, Newport, x.

F. applanatus, *Wallr.* On fallen Ash, wood, north of Shanklin.

F. annosus, *Fr.* On dead Birch at ground level, Marvel Copse, vi; on rotten Pine stump, Parkhurst, vi, ix.

Polyporus rufescens, *Fr.* In grass path, Parkhurst Forest, ix; side of footpath, Gatcombe, x.

P. squamosus, *Fr.* On stumps. Marvel Copse, iv, x; Gatcombe, vi.

P. hispidus, *Fr.* On Pine stump, Parkhurst Forest, iii.

P. betulinus, *Fr.* On Birch trees, Marvel Copse, iv, vi, &c.

P. adustus, *Fr.* On stumps of various trees. Sullens Copse, vi; Bowcombe Down, x; on Beech stump, Carisbrooke, x.

P. amorphus, *Fr.* Running over fallen Pine needles, Parkhurst Forest, iii.

P. caesius, *Fr.* On fallen branches, Combley Wood, vi.

Fistulina Hepatica, *Fr.* (Vegetable Beefsteak). Edible. On trunks of Oaks, &c. America Woods (Venables).

Boletus luteus, *L.* Edible. On the ground. Parkhurst Forest, ix; near Shanklin, x.

B. flavus, *With.* Edible. Under trees. Pine wood, Bowcombe, vi, x; Parkhurst Forest, ix.

B. duriusculus, *Schulz.* Edible. In open places, Parkhurst Forest, ix.

- B. badius**, *L.* Sand-pit, Marvel Copse, x.
B. piperatus, *Bull.* On the ground, Combley Wood, x.
B. bovinus, *L.* Edible. On the ground, near Pines. Parkhurst Forest, vi; Bowcombe, vi.
B. granulatus, *L.* Edible. Amongst grass under Pines, &c. Parkhurst Forest, ix; Bowcombe, x; Combley Wood, x; Sainham Copse, Godshill, x; near Shanklin, x.
B. pachypus, *Fr.* America Woods (Venables).
B. edulis, *Bull.* Edible. Near trees. Combley Wood, vi; Parkhurst Forest, ix; America Woods, x.
B. luridus, *Schaeff.* Poisonous. Under trees. Haven Street, vi; Parkhurst Forest, ix; near Shanklin, x.
B. scaber, *Fr.* Edible. Near trees. Firestone Copse, viii; Combley Wood, x.
B. versipellis, *Fr.* Edible. Near trees. Firestone Copse, viii.

AGARICINEAE (*Gill Fungi*).

Spore-surface folded in radiating gills.

MELANOSPORAE (Spores black).

- Coprinus comatus**, *Fr.* (Lawyer's-Wig Mushroom). Edible. In grass and on refuse. Parkhurst Forest, ix; Carisbrooke, x.
C. atramentarius, *Fr.* Edible. On moist ground near stumps. Firestone Copse, viii; Newport, xi.
C. extinctorius, *Fr.* On trunk of Ash, Newport, x.
C. fimetarius, *Fr.* On rich soil near Tolt Down, x.
C. niveus, *Fr.* On dung. Parkhurst, ix; Haven Street, x; Burnt-house Lane, Newport, x; Tolt Down, x; Ashey, x, &c.
C. micaceus, *Fr.* About old stumps, posts, &c. Common.
C. deliquescens, *Fr.* On moist ground. Parkhurst, ix; Combley Wood, x; Brighstone, xi.
C. plicatilis, *Fr.* In rich pastures, &c. Common.
Anellaria fimiputris, *Karst.* On ground in garden, Newport, x.
Panaeolus papilionaceus, *Fr.* On rich ground. Godshill, x; near Shanklin, x; Dark Lane, Whitcombe, x.
P. campanulatus, *L.* On manured ground, &c. Sullens Farm, vi; St. George's Down, x; Apes Down, x.
Psathyrella gracilis, *Fr.* Amongst grass on waysides, &c. Carisbrooke, x; Newport, x; Marvel Copse, x; Apes Down, x; Godshill, x, &c.
P. atomata, *Fr.* Amongst grass on waysides, &c. Marvel Copse, x; St. George's Down, x; Combley Wood, x; Shanklin, x; Dark Lane, Whitcombe, x.
P. disseminata, *Pers.* In moss at foot of trees, &c. Tolt Copse, vi; Burnt-house Lane, x; near Gatcombe, x.

Gomphidius viscidus, *Fr.* Edible. Under Fir trees, &c. Parkhurst Forest, ix; pine copse, Bowcombe, x; Marvel Copse, x; Wootton, x.

PORPHYROSPORAE (Spores purple or purple-brown).

Psathyra corrugis, *Pers.* In ditches, pastures, &c. Bowcombe Down, x; Godshill, x; Sullens Farm, x; near Shanklin, x.

Psilocybe sub-ericaea, *Fr.* In a pit, Parkhurst Forest, ix.

P. semilanceata, *Fr.* (Liberty-cap Fungus). Poisonous. In grass. Parkhurst Forest, ix; near Shanklin, x.

P. spadicea, *Fr.* Side of ditch, Parkhurst Forest, ix.

P. foenisecii, *Pers.* Amongst grass. In meadow, Staplers, Newport, iv; Rookley Wilderness, vii; lawn, Newport, vi, x; Combley Wood, vi; Bowcombe Down, vi, x, &c.

Hypholoma sublateralitium, *Schaeff.* Near old stumps, &c. Marvel Copse, v, xi.

H. capnoides, *Fr.* On decaying wood, America Woods, x.

H. epixanthum, *Fr.* On old stumps. Copse, near Wootton Bridge, x; St. George's Down, x; Combley Wood, x; America Woods, x.

H. fasciculare, *Huds.* Poisonous. On old stumps, trunks, rails, &c. Very common. Nearly all the year round.

H. velutinum, *Pers.* Amongst grass in moist place, Parkhurst Forest, vi.

H. appendiculatum, *Bull.* Edible. On the ground near wood. Blackwater, v; Marvel Copse, vi; Parkhurst Forest, vi, ix; Firestone Copse, viii.

H. hydrophilum, *Bull.* At foot of trunks, &c. Parkhurst Forest, ix; Apes Down, x; Marvel Copse, x; Godshill, x.

Stropharia aeruginosa, *Curt.* Poisonous. On ground, especially where rich and moist. Newport, x; Marvel Copse, x; Apes Copse, x; America Woods, x; Gatecombe, x, &c.

S. albo-cyanea, *Desm.* On the ground. Marvel Copse, x; Garstons Farm, x; Newport, x; near Shanklin, x.

S. inuncta, *Fr.* In grass, near Shanklin.

S. coronilla, *Bull.* In grass. America Woods, x; Pan Down, x.

S. semiglobata, *Batsch.* On dung. Rookley Wilderness, vii; Parkhurst Forest, ix, xi; Sullens Copse, vi; Combley Wood, vi; St. George's Down, x; near Shanklin, x, &c.

Agaricus campestris, *L.* (Common Mushroom). Edible. In meadows and downs. Abundant. April to November.

A. arvensis, *Schaeff.* (Horse Mushroom). Edible. In grass. Tolt Down, v; near Shanklin, x.

A. silvaticus, *Schaeff.* Edible. Under Pines, north of Shanklin, x.

A. haemorrhoidarius, *Schulz.* (Blood Mushroom). Edible. In grass. Ashey, x; Godshill, x; Haven Street, x.

A. comptulus, *Fr.* In grassy places. Parkhurst Forest, ix; Apes Down, ix; Ashey, x; Carisbrooke, x; America Woods, x.

OCHROSPORAE (Spores light brown or rust-colour).

Paxillus involutus, *Fr.* On the ground. Edible. Parkhurst Forest, ix; Marvel Copse, x; St. George's Down, x; wood, north of Shanklin, x.

Cortinarius (Hygro.) castaneus, *Bull.* On the ground under trees. Combley Wood, x; wood, north of Shanklin, x.

C. decipiens, *Fr.* Under trees. Tolt Down, x; near Shanklin, x.

C. (Tela.) hinnuleus, *Fr.* Under trees. Parkhurst Forest, ix; Combley Wood, x; wood, north of Shanklin, x.

C. brunneus, *Fr.* On the ground. Apes Copse, x; Haven Street, x.

C. hemitrichus, *Fr.* On the ground in wood north of Shanklin, x.

C. rigidus, *Fr.* On the ground, Combley Wood, x.

C. (Dermo.) tabularis, *Fr.* On the ground, America Woods.

C. caninus, *Fr.* On the ground. Parkhurst Forest, ix; Apes Copse, x.

C. anomalus, *Fr.* On the ground, America Woods, x.

C. cinnabarinus, *Fr.* On the ground, Combley Wood, x.

C. (Myx.) elatior, *Fr.* On the ground, Combley Wood, x.

C. (Phleg.) purpurascens, *Fr.* On the ground. Parkhurst Forest, ix; Sullens Copse, x.

Crepidotus mollis, *Fr.* On rotten wood. Apes Copse, x; Beech Copse, Godshill, x.

Tubaria furfuracea, *Pers.* On fallen twigs, &c. Marvel Copse, x; Apes Copse, x; Haven Street, x; Sullens Copse, x; Carisbrooke, x; near Shanklin, &c.

Flammula carbonaria, *Fr.* On burnt ground. St. George's Down, iii, x; Pan Down, x; copse, near Wootton Bridge, x.

F. inopoda, *Fr.* On stump. Beech Copse, Godshill, x.

F. ochrochlora, *Fr.* On buried wood. Parkhurst Forest, ix; Combley Wood, x; America Woods, x.

Galera tenera, *Schaeff.* Amongst grass. Parkhurst Forest, ix; Combley Wood, x; Pan Down, x.

G. ovalis, *Fr.* Amongst grass in moist places. St. George's Down, x; America Woods, x.

G. hypnorum, *Batsch.* Amongst moss. Widely distributed.

Naucoria cucumis, *Pers.* On the ground, Apes Down.

N. melinoides, *Fr.* In grass. Apes Copse, x; America Woods, x.

N. semiorbicularis, *Bull.* In grass, &c. St. George's Down, x; Carisbrooke, x; near Shanklin, x.

Hebeloma fastibile, *Fr.* Poisonous. On the ground. Marvel Copse, x; Combley Wood, x; wood, north of Shanklin, x.

H. testaceum, *Batsch.* On the ground, copse near Wootton Bridge.

H. mesophaeum, *Fr.* Under trees. Marvel Copse, x; Combley Wood, x; Godshill, x; Sullens Copse, x.

H. crustuliniforme, *Bull.* Poisonous. In woods, &c. Ashey, x; Tolt Down, x; Dark Lane, near Whitcombe, x.

H. crustuliniforme, *var. minor*, *Cke.* In woods, &c. Parkhurst Forest, ix; Marvel Copse, x; America Woods, x.

H. elatum, *Fr.* Under trees, Apes Copse, x.

Inocybe pyriodora, *Pers.* Under trees. Apes Copse, x.

I. rimosa, *Bull.* On the ground. Marvel Copse, x; copse, near Wootton Bridge, x.

I. asterospora, *Quél.* On the ground. Combley wood, x; Dark Lane, near Whitcombe, x.

I. geophylla, *Fr.* On the ground, under trees. Apes Copse, x; Combley Wood, x; Godshill, x; Sullens Copse, x; wood, near Shanklin, x; Dark Lane, Whitcombe, x.

I. scabella, *Fr.* On the ground, under trees. Combley Wood, x; Froglands, x; near Shanklin, x.

Bolbitius fragilis, *Fr.* Amongst grass in rich soil. Apes Copse, x; near Whitcombe, x.

B. tener, *Berk.* Amongst grass, Pan Down, x.

Pholiota praecox, *Pers.* Amongst grass. Roadside, Haven Street, vi; Bowcombe Down, vi.

P. spectabilis, *Fr.* On stumps and roots. Parkhurst Forest, ix; pine copse, Bowcombe, x.

P. marginata, *Batsch.* Under trees, Parkhurst Forest, xi.

P. mycenoides, *Fr.* In moss, Parkhurst Forest, ix.

RHODOSPORAE (Spores pink or salmon-colour).

Claudopus variabilis, *Pers.* On decaying twigs. Apes Copse, x; Marvel Copse, xi.

Clitopilus prunulus, *Scop.* (Plum Mushroom). Edible. In grass in woods, &c. Parkhurst Forest, ix; Apes Down, x; Ashey, x; Godshill, x; Sullens Farm, x; Tolt Down, x.

Leptonia lampropoda, *Fr.* In pasture, near Shanklin.

L. chalybea, *Pers.* In short grass, down near Godshill.

L. lazulina, *Fr.* In short grass, near Shanklin.

L. incana, *Fr.* Amongst grass, &c., roadside ditch, Newbridge.

Nolanea pascua, *Pers.* In woods and pastures. Common.

Entoloma sinuatum, *Fr.* Poisonous. On the ground. America Woods, x.

E. jubatum, *Fr.* In grass. Godshill, x; near Shanklin, x.

E. sericellum, *Fr.* In grass, Apes Down, x; America Woods, x.

E. rhodopolium, *Fr.* Poisonous. Under trees. St. George's Down, x; near Shanklin, x.

E. costatum, *Fr.* In grass, Apes Down, x.

E. sericeum, *Fr.* In grass. Pan Down, x; St. George's Down, x; Godshill, x; near Shanklin, x; Tolt Down, x, &c.

Pluteus cervinus, *Schaeff.* On wood. Parkhurst Forest, vi; pine copse, Bowcombe, x; America Woods, x; copse, Tolt Down, x.

P. nanus, *var. lutescens*, *Fr.* On twig, Combley Wood, x.

LEUCOSPORAE (Spores white or whitish).

Lenzites betulina, *Fr.* On stumps, &c. Wood, St. George's Down, ii; copse, near Wootton Bridge, x; Apes Down, x; timber yard, Newport, x.

Panus stypticus, *Fr.* Poisonous. On decaying wood, Gurnard, v; Apes Copse, x.

Cantharellus cibarius, *Fr.* (Chanterelle). Edible. On the ground. Combley Wood, vi; Firestone Copse, viii; Beech Copse, Godshill, x.

C. aurantiacus, *Fr.* (False Chanterelle). Poisonous [?]. Pine wood, Bowcombe, x.

C. infundibuliformis, *Fr.* Edible. On the ground, Combley Wood, x.

C. cinereus, *Fr.* On the ground, Combley Wood, x.

Nyctalis parasitica, *Fr.* On decaying *Russula foetens*. Combley Wood, x.

N. asterophora, *Fr.* On decaying *Russula nigricans*. Parkhurst Forest, ix; Combley Wood, x; Godshill, x; America Woods, x.

Hygrophorus coccineus, *Schaeff.* Edible. In grass. Meadow near Marvel Copse, ix; Pan Down, x.

H. miniatus, *Fr.* Edible. In grass. Apes Down, x; Sullens Copse, x.

H. puniceus, *Fr.* Edible. In grass, Apes Down, x.

H. obrusseus, *Fr.* In grass, Apes Down, x.

H. conicus, *Fr.* Poisonous. In grass. Meadow, Newport, vi; Apes Down, x.

H. chlorophanus, *Fr.* In grass. Meadow near Marvel Copse, x; Apes Down, x.

H. pratensis, *Fr.* Edible. In grass. Haven Street, x; down near Godshill, x; Sullens Copse, x.

H. virgineus, *Wulf.* Edible. In grass. Apes Down, x; down near Godshill, x; Tolt Down, x.

H. niveus, *Fr.* Edible. In grass, Haven Street.

H. ovinus, *Bull.* In grass. Apes Down, x; down near Godshill, x.

- H. hypothejus**, *Fr.* Under trees, Apes Copse, x.
Pleurotus ostreatus, *var. Columbinus*, *Quel.* (Tree Oyster).
 Edible. On base of Oak post, Bowcombe Down, ii.
P. acerosus, *Fr.* On the ground, in cart track, Combley Wood, x.
P. septicus, *Fr.* On Oak log, Ashey, x; on twig, Dark Lane, near Whitcombe, x.
Omphalia hydrogramma, *Fr.* Amongst leaves, Apes Copse, x.
O. pyxidata, *Bull.* In grass, down, near Godshill, x.
O. onisca, *Fr.* On the ground, Combley Wood, x.
O. umbellifera, *L.* On the ground, Marvel Copse, x.
O. grisea, *Fr.* On the ground, Sullens Copse, x.
Clitocybe odora, *Sow.* Edible. Under trees. Marvel Copse, x; near Shanklin, x.
C. rivulosa, *Pers.* Edible. Amongst grass in open places. Pan Down, x; St. George's Down, x; Haven Street, x; Carisbrooke, x; near Shanklin, x.
C. phyllophila, *Fr.* Amongst leaves, &c. Garstons Farm, x; St. George's Down, x; near Shanklin, x.
C. dealbata, *Sow.* In grass, Pan Down, x.
C. dealbata, *var. minor*, *Cke.* In grass, Bowcombe Down, x.
C. infundibuliformis, *Schaeff.* Edible. On the ground. Marvel Copse, x; America Woods, x; Tolt Down, x.
C. geotropa, *Bull.* Edible. Under trees, Marvel Copse, x.
C. inversa, *Scop.* Edible. Under trees, copse, near Bowcombe Down, x.
C. flaccida, *Sow.* Edible. Under trees, Marvel Copse, x.
C. brumalis, *Fr.* Under trees. Apes Copse, x; America Woods, x.
C. metachroa, *Fr.* Under trees, Marvel Copse, x.
C. ditopa, *Fr.* Under trees, America Woods, x.
C. fragrans, *Sow.* Amongst grass in open places, and near trees. Copse, near Sullens Farm, vi; Marvel Copse, x; Apes Copse, x; Godshill, x; Carisbrooke, x; Parkhurst Forest, xi.
Laccaria laccata, *Scop.* Edible. In woods. Common.
Lactarius turpis, *Fr.* Under trees. Marvel Copse, x; America Woods, x.
L. insulsus, *Fr.* In grass, Parkhurst Forest, ix.
L. pyrogalus, *Bull.* Poisonous. On the ground, Parkhurst Forest, ix.
L. vellereus, *Fr.* On the ground, under trees. Parkhurst Forest, ix; Combley Wood, x; Godshill, x.
L. deliciosus, *Fr.* (Orange Milk Agaric). Edible. On the ground, Parkhurst Forest, ix, xi.
L. quietus, *Fr.* Edible. On the ground. Marvel Copse, x; near Shanklin, x; America Woods, x.
L. rufus, *Scop.* Poisonous. Under Pines. Near Blackwater, vi; Combley Wood, x.

L. fuliginosus, *Fr.* On the ground. Parkhurst Forest, ix; Apes Copse, x.

L. serifluus, *Fr.* Under trees. Parkhurst Forest, ix, xi; Combley Wood, x; near Shanklin, x.

L. mitissimus, *Fr.* Edible. Under trees, Parkhurst Forest, vi.

L. subdulcis, *Fr.* Under trees. Parkhurst Forest, ix; Dark Lane, near Whitcombe, x.

Russula integra, *Fr.* On the ground, near trees. Firestone Copse, viii; Parkhurst Forest, ix; America Woods (Venables = *Agaricus integer*).

R. caerulea, *Fr.* On the ground near Pines. Parkhurst Forest, ix; pine copse, near Bowcombe, x.

R. nitida, *var. cuprea*, *Cke.* On the ground, America Woods, x.

R. puellaris, *Fr.* On the ground, near trees. Pine copse, Bowcombe, x; Beech Copse, Godshill, x; America Woods, x.

R. nigricans, *Fr.* Poisonous. On the ground. Pine copse, Bowcombe, x; Combley Wood, x; Parkhurst Forest, x; Beech Copse, Godshill, x; America Woods, x.

R. adusta, *Fr.* On the ground, near trees. Pine copse, Bowcombe, x; Godshill, x.

R. olivascens, *Fr.* On the ground, under trees. Parkhurst Forest, vi; Beech Copse, Godshill, x.

R. azurea, *Bres.* On the ground under trees. Wood, north of Shanklin, x; America Woods, x.

R. virescens, *Fr.* Edible. On the ground, Parkhurst Forest, ix.

R. furcata, *Fr.* On the ground. Parkhurst Forest, vi, ix; Combley Wood, vi; Sainham Copse, Godshill, x.

R. lepida, *Fr.* Edible. On the ground, Parkhurst Forest, ix.

R. xerampelina, *Fr.* On the ground. Parkhurst Forest, ix; Combley Wood, x.

R. vesca, *Fr.* Edible. On the ground. Parkhurst Forest, vi, ix; Combley Wood, vi; Sainham Copse, Godshill.

R. depallens, *Fr.* Edible. On the ground, Parkhurst Forest, vi, ix.

R. cyanoxantha, *Schaeff.* Edible. On the ground. Combley Wood, vi; Godshill, x; America Woods, x; Parkhurst Forest, xi.

R. fellea, *Fr.* Poisonous. Under Beeches, near Godshill.

R. drimeia, *Cke.* Under Pines, &c. Parkhurst Forest, ix; pine copse, Bowcombe, x.

R. ochroleuca, *Fr.* On the ground. Parkhurst Forest, ix; Beech Copse, Godshill, x.

R. foetens, *Fr.* On the ground. Sullens Copse, vi; Parkhurst Forest, ix, xi; Combley Wood, x.

R. fragilis, *Fr.* On the ground. Combley Wood, vi, x; Firestone Copse, viii.

R. fragilis, *var. nivea*, *Cke.* On the ground, Combley Wood, x.

R. fragilis, *var. violacea*, *Quel.* On the ground. Parkhurst Forest, ix; Godshill, x; America Woods, x.

Mycena corticola, *Fr.* On bark of trees. Beech Copse, Godshill, x; Sullens Copse, x.

M. vulgaris, *Pers.* Under trees, Combley Wood, x.

M. epipterygia, *Scop.* Amongst moss, &c. Bowcombe, x; Combley Wood, x; Sullens Copse, x; America Woods, x.

M. leucogala, *Cke.* On rotten wood. Combley Wood, x; Beech Copse, Godshill, x.

M. galopoda, *Fr.* Amongst grass, &c. Marvel Copse, x; copse near Wootton Bridge, x; Pan Down, x; Apes Copse, x; near Shanklin, &c.

M. sanguinolenta, *A. & S.* Amongst damp leaves, &c. Parkhurst Forest, vi; Combley Wood, vi, x; Marvel Copse, x; Godshill, x; Sullens Copse, x.

M. amicta, *Fr.* Amongst moss, Apes Copse, x.

M. iris, *Berk.* On stumps. Marvel Copse, x; wood north of Shanklin, x.

M. filopes, *Bull.* Under trees. Carisbrooke, x; Marvel Copse, x; copse near Wootton, x; Godshill, x; Shanklin, x, &c.

M. pullata, *Berk. & Cke.* Amongst leaves, Apes Copse, x.

M. alcalina, *Fr.* On stumps. Pan Down, x; Carisbrooke, x.

M. ammoniaca, *Fr.* On the ground under trees, especially Fir. Common.

M. metata, *Fr.* On the ground. Combley Wood, x; Sullens Copse, x.

M. stannea, *Fr.* On the ground. Pan Down, x; Sullens Copse, x; near Shanklin, x.

M. rugosa, *Fr.* On stumps, &c. Copse near Wootton Bridge, x; Apes Copse, x; Combley Wood, x; Beech Copse, Godshill, x.

M. galericulata, *Scop.* On stumps, &c. Common.

M. polygramma, *Bull.* On stump, Marvel Copse, x.

M. lactea, *Pers.* Under trees, Gatecombe, x.

M. luteoalba, *Bolton.* Amongst grass, Pan Down, x.

M. flavoalba, *Fr.* On the ground. Apes Copse, x; Godshill, x; Sullens Copse, x.

M. pura, *Pers.* Under trees. Parkhurst Forest, vi; Marvel Copse, x; Apse Copse, x; Godshill, x, &c.

M. pelianthina, *Bolton.* Amongst leaves, Marvel Copse, x.

Collybia radicata, *Relh.* Amongst grass, Carisbrooke, x.

C. fusipes, *Bull.* Edible. At foot of Oaks. Firestone Copse, viii; Godshill, x.

C. butyracea, *Bull.* On the ground under trees. St. George's Down, x; America Woods, x.

C. velutipes, *Fr.* On furze stump, St. George's Down, iii.

C. confluens, *Pers.* Amongst leaves, Apes Copse, x.

C. conigena, *Pers.* On chip of decaying pine-bark, Parkhurst Forest, ix; on cones, pine copse, Bowcombe, x.

C. dryophila, *Bull.* On the ground under or near trees. Common. Autumn.

- C. atrata**, *Fr.* On burnt ground, St. George's Down, x.
- C. ambusta**, *Fr.* On burnt ground, copse near Wootton Bridge.
- Marasmius peronatus**, *Fr.* Poisonous. Amongst dead leaves. Marvel Copse, x; St. George's Down, x; Beech Copse, Godshill, x.
- M. oreades**, *Fr.* (Fairy-Ring Champignon). Edible. Amongst short grass in open places. Common. Summer and Autumn.
- M. erythropus**, *Fr.* Amongst leaves. Bowcombe, x; near Shanklin, x; America Woods, x.
- M. calopus**, *Fr.* On the ground, Sullens Copse, x.
- M. ramealis**, *Fr.* On twigs. Apes Copse, x; Steephill, x.
- M. rotula**, *Fr.* On rotten wood. Sullens Copse, vi; Carisbrooke, x; Newport, x.
- M. graminum**, *Berk.* In short grass. Pan Down, x; near Shanklin, x.
- Tricholoma portentosum**, *Fr.* Edible. On the ground. Parkhurst Forest, ix; Combley Wood, x.
- T. albobrunneum**, *Fr.* On the ground. Parkhurst Forest, ix; Beech Copse, Godshill, x.
- T. rutilans**, *Schaeff.* Poisonous. On or near stumps, roots, &c. Parkhurst Forest, vi, ix; pine copse, Bowcombe, x; Marvel Copse, x; Sainham Copse, Godshill, x.
- T. saponaceum**, *Fr.* Poisonous. On the ground. Sullens Copse, x; Parkhurst Forest, xi.
- T. sulphureum**, *Fr.* Poisonous. On the ground, Sullens Copse, x.
- T. carneum**, *Bull.* Amongst grass, &c. Pan Down, x; near Godshill, x; Sullens Copse, x; Tolt Down, x.
- T. gambosum**, *Fr.* (St. George's Mushroom). Edible. In hedge-bank, near Whitcombe, v; in turf by roadside, Wootton, vi.
- T. personatum**, *Fr.* (Blewits). Edible. Amongst grass. Pasture near Shanklin, x; Tolt Down, x.
- T. nudum**, *Bull.* (Blue-caps). Edible. Amongst dead leaves, &c. Marvel Copse, x; Newport, x; wood north of Shanklin, x; Dark Lane, near Whitcombe, x; Parkhurst Forest, xi, &c.
- T. glaucocanum**, *Bres.* In turf by roadside, Shanklin.
- T. panaeolum**, *Fr.* Edible. On the ground, Ashe, x; Tolt Down, x.
- T. grammopodium**, *Bull.* Edible. Amongst grass in open places. Apes Down, x; Ashe, x; Godshill, x; Tolt Down, x.
- T. subpulverulentum**, *Pers.* Amongst grass. Pasture near Shanklin, x; Tolt Down, x.
- Armillaria mellea**, *Vahl.* Edible. At foot of or near trees. Parkhurst Forest, ix; Apes Copse, x; Haven Street, x; Sullens Copse, x.
- A. mucida**, *Schrad.* On decaying branch of Beech, Godshill.
- Lepiota procera**, *Scop.* (Parasol Mushroom). Edible. Amongst grass in open places, &c. Widely distributed. Autumn.
- L. gracilentia**, *Kromb.* In pasture near Shankin, x.

L. cristata, *A. & S.* Amongst grass, &c. Apes Down, x; Combley Wood, x; Tolt Down, x; Gatecombe, x.

L. holosericea, *Fr.* Edible. Amongst grass. St. George's Down, x; Tolt Down, x.

L. granulosa, *Batsch.* Edible. On the ground, Sainham Copse, Godshill, x.

L. amianthina, *Scop.* Amongst grass, Godshill, x; near Shanklin, x.

Amanitopsis vaginata, *Roze.* Edible. On the ground under trees. Combley Wood, vi, vii; Northcourt Down, Shorwell, vi; Parkhurst Forest, ix; America Woods, x.

Amanita phalloides, *Fr.* Poisonous. On the ground under trees. Marvel Copse, x; wood north of Shanklin, x.

A. mappa, *Fr.* Poisonous. On the ground under trees, Marvel Copse, x.

A. muscaria, *Fr.* (Fly Agaric). Poisonous. Under Birches. Marvel Copse, ix, x; Apes Down, x; Parkhurst Forest, xi; America Woods (Venables = *Agaricus muscarius*).

A. strobiliformis, *Vitt.* Edible. Amongst grass, Apes Down, x.

A. rubescens, *Fr.* Edible. On the ground. Combley Wood, vi; Parkhurst Forest, ix; Godshill, x.

A. spissa, *Fr.* On the ground. Parkhurst Forest, vi, ix; Combley Wood, vi.

ASCOMYCETES.

Spores in mother-cells termed Asci.

HYSTERIACEAE.

Ascophore elongate, splitting.

Hypoderma hederæ, *De Not.* In the Landslip (Venables = *Hysterium hederæ*).

Dichaena quercina, *Fr.* On living Oak branches. Near Blackwater, vi; Firestone Copse, viii.

DISCOMYCETES (Disk Fungi).

Ascophore flat or cup-shaped.

Ascomyces turgidus, *Phil.* (Witches' brooms). On Birch, Marvel Copse, x.

Phacidium multivalve, *Kze. & Schmidt.* On dead leaves of Holly. Near Lynn Farm, Haven Street, vi; America Woods, x; St. George's Down, iii.

Trochila ilicis, *Crouan.* On dead leaves of Holly. St. George's Down, iii; near Lynn Farm, Haven Street, vi; near Bowcombe Down, vi; America Woods, x.

Bulgaria polymorpha, *Wettstein*. On trunks of old felled trees, Newport, x.

Coryne atrovirens, *Sacc*. On decaying wood, Parkhurst Forest, ix.

Mollisia melaleuca, *Sacc*. On decaying wood, America Woods, x.

M. cinerea, *Karst*. On decaying wood. Pan Down, vi; Combley Wood, x; America Woods, x.

Helotium claroflavum, *Berk*. On dead stem of Briar, Apes Down, x.

H. flavum, *Phil*. On decorticated branch, America Woods, x.

H. virgultorum, *Karst*. On rotten twigs. Sullens Copse, x; America Woods, x; copse near Wootton Bridge, x.

H. virgultorum var. **fructigenum**, *Rehm*. On decaying acorns. Apes Down, x; Combley Wood, x.

H. herbarum, *Fr*. On dead stem, Carisbrooke, x.

H. phyllogenon, *Rehm*. On dead leaf, Combley Wood, x.

Ciboria pseudotuberosa, *Sacc*. On decaying wood, America Woods, x.

Chlorosplenium aeruginosum, *De Not*. On rotten wood. Parkhurst Forest, iii; Combley Wood, vi; Firestone Copse, viii; America Woods, x.

Sphaerospora trechispora, *Sacc*. On bare ground, cliff, Blackgang, iii.

Tapesia sanguinea, *Fckl*. On rotten wood, Combley Wood, x.

Lachnea scutellata, *Gillet*. On damp ground, Totland Bay, viii.

Dasyscypha virginea, *Fckl*. On decaying twigs. Marvel Copse, vi; Combley Wood, vi; Pan Down, vi; Shanklin (Venables = *Peziza*).

D. nivea, *Mass*. On rotten twigs, Parkhurst Forest, vi; on decayed Bramble stem, Marvel Copse, iii.

Geopyxis coccinea, *Mass*. (Scarlet Cup-moss). On decaying twigs among leaves, &c. Apes Copse, ii; Burnt-House Lane, near Newport, i, ii; Dark Lane, near Whitcombe, i, ii; Marvel Copse, i; Garstons, iii; in a wood near Shanklin (Venables = *Peziza*).

Barlaea Crouani, *Mass*. Amongst moss on wall, Newport, xii.

Humaria rutilans, *Sacc*. On down near Shanklin (Venables = *Peziza*).

Peziza vesiculosa, *Bull*. Among sand in greenhouse, Newport, v.

P. vesiculosa, var. **cerea**, *Rehm*. In cucumber frame, Shanklin (Venables = *P. cerea*).

P. badia, *Pers*. On bare ground, sand-pit, Marvel Copse, vi.

P. pustulata, *Pers*. On the ground, Combley Wood, x.

Otidea aurantia, *Mass*. Edible. On bare ground. Parkhurst Forest, ix; sand-pit, Marvel Copse, x.

Rhizina inflata, *Quél*. On burnt ground, St. George's Down, x.

Helvella crispa, *Fr*. Edible. On the ground, Marvel Copse, x.

Morchella crassipes, var. **Smithiana**, *Cke*. On sandy bank near Marvel Copse, v; Gatcombe, v.

Mitrula phalloides, *Chev*. In wet ditch, Parkhurst Forest, v.

PYRENOMYCETES (Capsular Fungi).

Ascophore enclosed in a flask-shaped Perithecium.

Nectria cinnabarina (Tode). On dead branch, copse, Tolt Down, x.

Hypomyces rosellus (A. & S.). On *Fomes annosus*, Marvel Copse, vi; on *Laccaria laccata* and *Cortinarius purpurascens*, Parkhurst Forest, ix.

Xylaria polymorpha (Pers.) Grev. On Elm stumps. Watergate Road, near Newport, iv, vi, x, &c.; Gatcombe, x.

X. hypoxylon (L.). (Candle-snuff Fungus). On stumps, chips, &c. Common.

Ustulina vulgaris, Tul. On old trunk, Newport, x.

Daldinia concentrica (Bolt.). On dead trunks, &c. Apes Farm, ii; Tolt Down, v; Marvel Copse, iii, vi; Combley Wood, vi; Westridge Copse, viii; common on trees in Luccombe Chine (Venables = *Sphaeria*).

Hypoxylon coccineum, Bull. On dead wood. Parkhurst Forest, ix; copse, Bowcombe Down, x.

H. fuscum (Pers.) Fr. On dead branches, especially Hazel. Combley Wood, vi; Parkhurst Forest, ix; copse, Tolt Down, x; Godshill, x; Marvel Copse, iii.

H. multiforme (Fr.). On dead branches, &c. Godshill, x; Westover, x.

Phyllochora ulmi (Dur.). On Elm leaves. Common.

Rhopoglyphus pteridis, Wurt. On dead stems of Bracken. Blackwater, vi; Marvel Copse, vi.

Dothidea sambuci, Fr. On dead branch of Sycamore, Pan Down, vi.

Rhytisma acerinum (Pers.). On living leaves of Sycamore. Common.

R. salicinum (Pers.). On leaves of Willow, Tolt Down, x.

Diatrype quercina (Pers.). On fallen branches of Oak. Combley Wood, ii, vi; Marvel Copse, vi; Parkhurst Forest, vi; Firestone Copse, viii.

Cucurbitaria rhamni, var. **viburni**, Sacc. On dead branches of Wayfaring Tree, Pan Down, vi.

Lasiosphaeria ovina, C. & De N. On decaying wood, Combley Wood, vi.

Clypeosphaeria notarisii, Fckl. On dead stems of Bramble, Marvel Copse, vi.

Anthostoma gastrinum, Sacc. Bonchurch (Venables = *Sphaeria irregularis*).

Pleospora ulmicola, Allesch. On living leaves of Wych Elm, Parkhurst Forest, ix.

Uncinula aceris, Sacc. On living leaves of Hedge Maple. Burnt-House Lane, near Newport, vi; Combley Wood, viii.

Erysiphe tortilis (*Wallr.*). On living leaves of Dog-wood, Gurnard, viii; Firestone Copse, viii.

E. communis (*Wallr.*). On Enchanter's Nightshade, copse near Wootton station, viii.

E. galeopsidis, *D.C.* On Hedge Woundwort, Parkhurst Forest, ix.

Lasiobotrys lonicerae, *Kze.* On species of *Lonicera* (*Eng. Flora*).

PHYCOMYCETES (*Moulds*).

Alga-like Fungi, with sexual reproduction.

Mucor mucedo, *L.* (Common White Mould). On vinegar, &c., Newport, x.

Spinellus fusiger, *Van Teigh.* On decaying *Mycena*, Sullens Copse, x.

Cystopus candidus, *Lév.* On living plants of Shepherd's Purse, Newport, x.

Phytophthora infestans, *De By.* (Potato disease). On Potato leaves. Common. Newport, viii, &c.

Saprolegnia ferox, *Nees.* (Salmon disease). On Water-bug, Newport, ix.

Pythium De-Baryanum, *Hesse.* Causes "damping off." On cultivated Cress seedlings, Newport, &c.

Empusa muscae, *Cohn.* On dead House-flies, Newport, viii, ix.

UREDINACEAE (*Rust Fungi*).

Parasitic on higher plants. Heteroecious.

Melampsora helioscopiae, *Wint.* On Petty Spurge, garden, Newport, x.

M. farinosa (*Pers.*). On leaves of Sallow, Firestone Copse, viii.

M. larici-tremulae, *Kleb.* Uredospores on leaves of Aspen, Firestone Copse, viii.

Coleosporium sonchi (*Pers.*). On Butterbur, near Wootton station, viii; Gurnard, viii, &c.

Uromyces fabae (*Pers.*). On leaves of Broad Bean, Newport, vii.

Puccinia thesii (*Desv.*). Aecidiospores on Bastard Toadflax, Bowcombe Down, vi.

P. violae (*Schum.*). On leaves of Dog Violet, copse near Wootton station, viii.

P. albescens (*Grev.*). On Moschatel, Staplers Copse, iv.

P. primulae (*D.C.*). On leaves of Primroses. Common.

- P. vincae**, *Berk.* On *Vinca major* (Eng. Flora).
P. graminis (*Pers.*). On leaves of Oats, Totland Bay, viii.
P. rubigo-vera (*D.C.*). Uredospores on sheaths of Wood False-brome, Combley Wood, vii; on leaves of Barley, Yarmouth, viii.
P. poarum, *Niels.* Aecidiospores on leaves of Butterbur, near Wootton station, viii.
P. caricis (*Schum.*). Aecidiospores on Stinging Nettle, hedge-bank, near Gatcombe, v.
P. suaveolens (*Pers.*). On Creeping Plume-Thistle. Gatcombe, vi; Parkhurst Forest, ix.
P. hieracii, *Mart.* On Marsh Plume-Thistle, Parkhurst Forest, ix.
P. iridis (*D.C.*). On Gladdon, near Ryde (Venables = *P. truncata*).
P. Baryi (*B. & Br.*). On leaves of Wood False-brome, near Totland, viii.
P. smyrnii, *Corda.* Aecidiospores. To the west of Ventnor (Venables = *Aecidium smyrnii*).
P. cardui, *Plow.* On leaves of Marsh Plume-Thistle, copse near Wootton Station, viii.
Phragmidium tormentillae, *Fckl.* Aecidiospores on Barren Strawberry, Pan Down, vi.
P. violaceum (*Schultz.*). On leaves of Bramble. Gurnard, viii; near Totland, viii; Wootton, viii; Tolt Down, x; Newport, x.
P. rubi (*Pers.*). On leaves of Bramble. Marvel Copse, vi; Haven Street, vii.
Triphragmidium ulmariae (*Schum.*). On Meadow-Sweet, Haven Street, vi.
Uredo plantaginis, *B. & Br.* On Broad-leaved Plantain, garden, Newport, x.
Aecidium euphorbiae (*Gmel.*). On Dwarf Spurge, cornfield, Foreland, vii.

USTILAGINACEAE (*Smut Fungi*).

Ustilago avenae, *Jensen.* On ears of Oats. Foreland, vii; bank of the Medina, near Newport, viii.

SPHAEROPSIDEAE (*Imperfect capsular Fungi*).

With Perithecia but without Asci.

Phyllosticta bellunensis, *Mart.* On living leaves of Wych Elm, Parkhurst Forest, ix.

P. brassicae, *Westend.* On living leaves of Cauliflower, Parkhurst, ix; on dead leaves of Broccoli, Newport, iii.

HYPHOMYCETES (Moulds).

Reproduction by naked conidia.

Monilia fructigena, *Pers.* On decaying apples, Newport, ix.

Trichoderma lignorum, *Harz.* Conidial form of *Hypocrea rufa*. On dead branches, &c. Combley Wood, vi; Firestone Copse, viii; copse near Wootton Bridge, x; Sullens Copse, x.

Aspergillus glaucus, *Link.* Conidial form of *Eurotium herbariorum*. On various decaying substances. Common.

Penicillium glaucum, *Link.* (Blue Mould). On decaying cheese, jam, fruit, &c. Common.

Sepedonium chrysospermum, *Fr.* Conidial form of *Hypomyces chrysospermus*. On decaying *Boleti*. Parkhurst Forest, ix; St. George's Down, x.

Bispora monilioides, *Corda.* On Beech stump, Godshill, x.

Macrosporium tomato, *Cke.* (Tomato disease). On ripe Tomatoes, Newport, ix.

Isaria farinosa, *Fr.* Conidial form of *Cordyceps militaris*. On dead chrysalis, Newclose, near Newport, iv.

Tubercularia vulgaris, *Tode.* Conidial form of *Nectria cinnabarina*. On dead branch, wood north of Shanklin, x.

Aegerita candida, *Pers.* On rotten branch, Parkhurst Forest, ix.

MYCETOZOA.

Singular organisms, often included among Fungi, but rather to be placed midway between the Animal and Vegetable Kingdoms.

Physarum nutans, *Pers.* On rotten wood, Marvel Copse, viii.

P. virescens, *Ditm.* On Pine needles, Parkhurst Forest, vi; on dead Oak leaves, Combley Wood, vi; on trunk of Alder, Shanklin, x.

Craterium leucocephalum, *Ditm.* On dead Oak leaf, Marvel Copse, iii.

Leocarpus vernicosus, *Link.* On vegetable *débris*, Newport, x.

Diachaea subsessilis, *Peck.* (A. Lister).

Didymium effusum, *Link.* On dead Ivy leaves, lane near Carisbrooke, ii; on dead and living leaves, moat, Carisbrooke Castle, iii.

Spumaria alba, *D.C.* On grass, &c. Lane near Bowcombe Down, x; ditch, Pan Down, x; St. George's Down, x.

Stemonitis fusca, *Roth.* On decaying wood, Combley Wood, vi.

Trichia affinis, *De By.* On rotten wood, Gatcombe, iii.

Perichaena populina, *Fr.* Shanklin (Venables).

Lycogala miniatum, *Pers.* On dead wood, Blackwater Marsh, iii; on Hazel stump, Sullens Copse, vi; on decaying trunk, Newport, x; on Pine stump, St. George's Down, xi.

NOTE.—With reference to the definition of the order TREMELLINEAE, page 46, exception should be made in the case of certain genera, in which the spore-surface is confined to one side; moreover, in *Tremellodon* it is spinous.

FRESHWATER ALGAE.

By G. S. WEST, M.A., A.R.C.S., F.L.S.,

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ALGAE are plants of a simple or complex structure belonging to the great group of the Thallophyta. Most of them live in the sea, fringing the coasts of all countries, and are known as sea-weeds. Large numbers of them, however, are fresh-water or subaërial in habit, occurring in all moist and wet situations. Many only thrive when exposed for prolonged periods to a damp atmosphere, whereas others succumb very rapidly if not completely submerged, and some can only exist in waterfalls and torrents. The majority of Algae can only attain their full development when completely submerged. They may be free-floating or attached, and many of the fresh-water species occur in gelatinous masses adherent to stones or to the submerged portions of more highly organised aquatic plants.

Algae are distinguished from Fungi principally by the presence of chlorophyll, and therefore by their holophytic existence. Although all Algae possess chlorophyll they are not always of a green colour; they may be yellow-green, blue-green, red, or brown, in which case the chlorophyll is masked by some other pigment.

A great many different types of structure occur throughout the group, from simple unicells to complex multicellular plants. The thallus of the higher types increases in size either by apical or intercalary growth.

The Algae are divided into classes according to the dominant colouring matter present in the cells. It so happens that the large groups of these plants, which are characterized by definite pigments, also agree in other particulars, but more especially in their reproductive processes. The Green Algae (Chlorophyceae), the Diatoms (Bacillarieae), and Blue-green Algae (Myxophyceae) are the three largest fresh-water groups.

Vegetative multiplication occurs in the unicellular Algae by simple cell-division, and sometimes in the filamentous species by fragmentation of the filaments.

Asexual reproduction may occur by special non-motile "cysts," by non-motile resting-spores, or by motile cells known as zoogonidia (zoospores). The latter are the most frequent of the asexual reproductive bodies of freshwater Algae, but are strangely absent from the large group of the Conjugatae. Each zoogonidium on coming to rest, secretes for itself a cell-wall, and begins to develop into a new plant.

Sexual reproduction is fairly general, but in some cases the sexual differences are scarcely evident. It may take place by a fusion (1) of precisely similar sexual cells (isogametes), or (2) of clearly differentiated sexual cells (heterogametes). In the first case the process is known as conjugation, in the second the process is one of fertilization. The sexual cells may each be non-motile, or one or both motile. In some of the Algae the sexual organs are of a very high type.

The following list of Freshwater and Terrestrial Algae has been compiled by Mr. S. W. Pring from material collected by himself, the Rev. H. M. Livens, and Mr. P. Wadham, and forwarded to Mr. G. S. West for identification—excepting the few species marked with an asterisk, which have been named by Mr. Pring (EDITOR).

CLASS: PHAEOPHYCEAE.

ORDER: SYNGENETICAE.

FAMILY: CHRYSOMONADINACEAE.

Synura uvella, *Ehrenb.* Niton; Westminster millpond, Newport.

FAMILY: DINOBRYACEAE.

***Dinobryon sertularia**, *Ehrenb.* Bowcombe.

CLASS: CHLOROPHYCEAE.

ORDER: CHAETOPHORALES.

FAMILY: ULOTRICHACEAE.

Ulothrix subtilis, *Kütz.* Ditch, Blackwater; the Undercliff.

U. aequalis, *Kütz.* In stream, Carisbrooke.

U. sp. (? **U. zonata** (*Web. et Mohr.*) *Kütz.*). On stones in fast-running water, Westmill, Newport.

Stichococcus bacillaris, *Näg.* On chalk, Carisbrooke; on ground, Bleak Down.

FAMILY: MICROTHAMNIACEAE.

Microthamnion strictissimum, *Rabenh.* Ditch, Blackwater.

ORDER: SCHIZOGONIALES.

FAMILY: PRASIOLACEAE.

Schizogonium crispum (*L.*) *Gay.* On ground, Bleak Down; Carisbrooke.

ORDER: MICROSPORALES.

FAMILY: MICROSPORACEAE.

Microspora floccosa (*Vauch.*) *Thur.* The Undercliff.

ORDER: CLADOPHORALES.

FAMILY: CLADOPHORACEAE.

Cladophora crispata (*Roth*) *Kütz.* On damp shady banks and at the sides of streams, Whitwell and Newport.

ORDER: SIPHONEAE.

FAMILY: VAUCHERIAEAE.

Vaucheria terrestris, *Lyngb.* On bank near Chillerton (in fruit).

V. sp. (sterile). In stream, Carisbrooke.

ORDER: CONJUGATAE.

FAMILY: ZYGNEMACEAE.

Mougeotia sp. (sterile). Ladder Chine, Chale.

Spirogyra sp. (sterile). Bowcombe; Niton.

FAMILY: DESMIDIACEAE.

Cylindrocystis crassa, *De Bary*. On ground, Newport.

Closterium Leibleinii, *Kütz.* Pond, Heytesbury Farm, near Newport.

C. moniliferum (*Bory*) *Ehrenb.* Westminster millpond.

C. Ehrenbergii, *Menegh.* Bowcombe marsh.

C. acerosum (*Schrank*) *Ehrenb.* Niton.

***C. setaceum**, *Ehrenb.* Pond near Fleetlands, Newtown.

***Pleurotaenium truncatum** (*Bréb.*) *Näg.* Pond near Fleetlands.

Cosmarium obtusatum, *Schmidle.* Pond, Heytesbury Farm (S. W. Pring). A very rare species. This is a new record for the British Isles.

C. Botrytis (*Bory*) *Menegh.* Pond, Heytesbury Farm.

C. contractum, *Kirchn.*, var. **ellipsoideum** (*Elfv.*) *W. & G. S.* West. Ditch, Blackwater.

C. Meneghinii, *Bréb.* Bowcombe marsh.

***C. pyramidatum**, *Bréb.* Pond near Fleetlands.

ORDER: PROTOCOCCOIDEAE.

FAMILY: CHAETOPELTIDEAE.

***Chaetosphaeridium globosum** (*Nordst.*) *Klebahn.* Pond, Fairlee, near Newport.

FAMILY: VOLVOCACEAE.

Carteria multifilis (*Fresen.*) *Dill.* Westminster millpond.

Chlamydomonas pulvisculus, *Ehrenb.* Ditch, Blackwater.

***Panderina morum** (*Müll.*) *Bory.* Magazine Pond, Parkhurst.

Eudorina elegans, *Ehrenb.* Bowcombe marsh.

***Volvox globator** (*L.*) *Ehrenb.* Magazine Pond.

FAMILY: CHARACIEAE.

***Characium Pringsheimii**, *A. Br.* Pond, Fairlee.

FAMILY: PLEUROCOCACEAE.

Pleurococcus vulgaris, *Menegh.* Carisbrooke; amongst moss, Chillerton; on stone, Gatcombe mill; on ground, Bleak Down.

P. sp. ? On chalk, Carisbrooke.

FAMILY: HYDRODICTYACEAE.

***Pediastrum sp. ?** Westminster millpond.

FAMILY: PROTOCOCCACEAE (OR AUTOSPORACEAE).

***Scenedesmus quadricauda** (*Turp.*) *Bréb.* Pond, Heytesbury Farm.

S. obliquus (*Turp.*) *Kütz.* In trough, Blackgang.

Ankistrodesmus falcatus (*Corda*) *Ralfs.* Ditch, Blackwater.

A. convolutus (*Corda*) *Ralfs.* In trough, Blackgang.

CLASS: HETEROKONTAE.

ORDER: CONFERVALES.

FAMILY: TRIBONEMACEAE.

Tribonema bombycinum, *forma minor* (*Wille*) *G. S. West.* Ditch, Blackwater.

T. affine (*Kütz.*) *G. S. West.* The Undercliff.

CLASS: BACILLARIEAE.

ORDER: CENTRICAE.

FAMILY: MELOSIRACEAE.

Melosira varians, *Ag.* Bowcombe marsh; Carisbrooke; Westmill pond.

ORDER: PENNATAE.

FAMILY: MERIDIONACEAE.

Meridion circulare, *Ag.* Carisbrooke; Westmill pond.

FAMILY: DIATOMACEAE.

Diatoma vulgare, *Bory.* Pond, Fairlee; Carisbrooke; Westmill pond.

FAMILY: FRAGILARIACEAE.

Fragilaria virescens, *Ralfs.* Carisbrooke.

F. capucina, *Desmaz.* Bowcombe marsh.

Synedra Ulna (*Nitzsch.*) *Ehrenb.* Pond, Fairlee; Bowcombe marsh; Carisbrooke; Westmill pond.

S. Ulna, *var. splendens* (*Kütz.*) *Brun.* Ponds, Heytesbury Farm.

S. pulchella, *Kütz.* Bowcombe marsh.

S. Åcus (*Kütz.*) *Grun.* Ponds at Heytesbury Farm and Fairlee.

S. Vaucheriae, *Kütz.* Westmill pond.

FAMILY: EUNOTIACEAE.

Eunotia pectinalis (*Kütz.*) *Rabenh.* Bowcombe marsh.

E. lunaris (*Ehrenb.*) *Grun.* Ditch, Blackwater.

FAMILY: ACHNANTHACEAE.

Achnanthes linearis, *W. Sm.* Ponds, Heytesbury Farm.

A. microcephala, *Kütz.* Pond, Fairlee.

A. Hungarica, *Grun.* Pond, Fairlee.

FAMILY: COCCONEIDACEAE.

Cocconeis Placentula, *Ehrenb.* Pond, Fairlee; Bowcombe marsh.

C. Pediculus, *Ehrenb.* Pond, Fairlee; Westmill pond; ponds, Heytesbury Farm.

FAMILY: NAVICULACEAE.

Navicula gracilis, *Kütz.* Westminster millpond; Westmill pond; Bowcombe marsh.

N. serians (*Bréb.*) *Kütz.* Bowcombe marsh.

N. mesolepta, *Ehrenb.* Westminster millpond.

N. viridis, *Kütz.* Westminster millpond.

N. exilis, *Grun.* Westminster millpond.

N. producta, *W. Sm.* Westminster millpond; pond, Fairlee.

N. Amphisbaena, *Bory.* Westminster millpond.

N. sphaerophora, *Kütz.* Ditch, Blackwater.

- N. radiosa**, *Kütz.* Ponds, Heytesbury Farm.
N. elliptica, *Kütz.* In bog, Whale Chine, Chale.
N. Brebissonii, *Kütz.* Westminster millpond; in bog, Undercliff.
N. cryptocephala, *Kütz.* In bog, Whale Chine; Undercliff.
N. dicephala, *Ehrenb.* In pond, Carisbrooke.
N. affinis, *Ehrenb.* Westmill pond.
N. cuspidata, *Kütz.* Westmill pond.
Stauroneis anceps, *Ehrenb.* Westminster millpond.
Gyrosigma acuminatum (*Kütz.*) *Cleve.* Ponds, Heytesbury Farm.
G. Spencerii (*Queck.*) *O.K.* Ponds, Heytesbury Farm; Westmill pond.

FAMILY: GOMPHONEMACEAE.

- Gomphonema constrictum**, *Ehrenb.* Bowcombe marsh; Carisbrooke.
G. constrictum, *var. capitatum* (*Ehrenb.*) *Van Heurck.* Ditch, Blackwater.
G. olivaceum (*Lyngb.*) *Kütz.* Ponds, Heytesbury Farm.
G. intricatum, *Kütz.* Pond, Fairlee.
Rhoicosphenia curvata (*Kütz.*) *Grun.* Pond, Fairlee.

FAMILY: COCCONEMACEAE.

- Cocconema lanceolatum**, *Ehrenb.* Ditch, Blackwater.
C. turgida (*Greg.*) *G. S. West.* Pond, Fairlee.
Amphora ovalis, *Kütz.* Bowcombe marsh.
Epithemia turgida (*Ehrenb.*) *Kütz.* Pond, Fairlee; ponds, Heytesbury Farm; Whale Chine.
E. Argus (*Ehrenb.*) *Kütz.* In bog, Undercliff.
E. gibberula, *Kütz.* In bog, Undercliff.

FAMILY: NITZSCHACEAE.

- Nitzschia Palea** (*Kütz.*) *W. Sm.* Fairlee; Bowcombe marsh; Undercliff; Carisbrooke; Westmill pond.
N. linearis (*Ag.*) *W. Sm.* Westminster millpond; Westmill pond.
N. constricta (*Kütz.*) *Pritch.* Westminster millpond.
N. acicularis, *W. Sm.* Westminster millpond; Westmill pond.
N. Sigma (*Kütz.*) *W. Sm.* Westminster millpond; Westmill pond.
N. sigmoidea (*Ehrenb.*) *W. Sm.* Ponds, Heytesbury Farm.
N. Tryblionella, *Hantzsch.* Pond, Fairlee.
Hantzschia Amphioxys (*Ehrenb.*) *Grun.* Ponds, Heytesbury Farm; on ground, Newport.

FAMILY: SURIRELLACEAE.

Cymatopleura Solea (*Bréb.*) *W. Sm.* Westminster millpond ; Bowcombe marsh ; Westmill pond.

Surirella ovalis, *Bréb.* Pond, Fairlee ; ponds, Heytesbury Farm ; Carisbrooke.

S. ovalis, *var. minuta*, *Bréb.* Westmill pond.

CLASS: MYXOPHYCEAE.

ORDER: HORMOGONEAE.

FAMILY: NOSTOCACEAE.

Nostoc commune, *Vauch.* On ground, Bowcombe Down.

N. muscorum, *Ag.* (Young colonies). On ground, Newport.

FAMILY: OSCILLATORIACEAE.

Lyngbya Martensiana, *Menegh.* Carisbrooke.

L. sp. ? In trough, Blackgang.

Phormidium autumnale (*Ag.*) *Gom.* Carisbrooke ; on ground, Newport.

P. Retzii (*Ag.*) *Gom.* In trough, Blackgang.

P. molle (*Kütz.*) *Gom.* In bog below Ladder Chine.

Oscillatoria limosa, *Ag.* Westminster millpond ; Carisbrooke ; on stones in fast-running water, Westmill.

O. irrigua, *Kütz.* On stones in fast-running water, Westmill.

NOTE.—Students thinking of taking up the study of the Freshwater Algae would do well to consult “A Treatise on the British Freshwater Algae,” by G. S. West, 1904, pub. at Cambridge by the University Press: price 10/6. In this work a comprehensive review is given of all the sub-divisions of this extensive group of plants down to the genera (EDITOR).

MARINE ALGAE.

COMPILED BY THE EDITOR.

THE arrangement adopted in the following list of "Seaweeds" is mainly that of the late Mr. E. A. L. Batters, B.A., in his "Catalogue of the British Marine Algae," issued as a supplement to the "Journal of Botany," in 1902, with a few alterations suggested by Mr. E. M. Holmes, F.L.S.

I am indebted to this "Catalogue" for a large number of records of Isle of Wight species. My other chief sources of information have been the list prepared by Mr. A. Hambrough, F.L.S., and published in Venables' "Guide to the I. of W.," 1860; a little book on the "Seaweeds of the I. of W.," by Mr. C. Parkinson, published at Ventnor at a later date; and some records supplied to me by Mr. P. H. Millidge, of Newport.

I have to thank Mr. E. M. Holmes for kind advice and information in reference to the compilation of this list.

The number of species here recorded for the Isle of Wight is 216, out of about 750 to be found in the whole of Britain; but as is pointed out by Mr. Holmes in the "Victoria History of Hampshire and the Isle of Wight," 1900, the number thus far recorded for the whole of the county (there given as 214 species) does not compare very favourably with the much more extensive collections made from the coasts of the adjoining counties. There is thus plenty of scope yet for algological workers on the favoured shores of the Isle of Wight.

[The species marked with an asterisk have been discovered as British since the publication of Harvey's "Phycologia Britannica."]

ORDER: CYANOPHYCEAE, SACHS.

FAM. OSCILLARIACEAE, STIZ.

Lyngbya majuscula, *Harv.* Gurnard Bay (Miss Kirkpatrick, in Venables' Guide).

Calothrix confervicola, Ag. West Cowes, on *Laurencia obtusa* (Miss K., in Ven. Guide).

Isactis plana, Thur. (= *Rivularia plana*, Harv.). Ventnor (Batt. Cat.).

ORDER: CHLOROPHYCEAE, HARV.

FAM. ULVACEAE, RKE.

Monostroma Grevillei, Wittr. (= *Ulva Lactuca*, Grev.). I. of W. (Batt. Cat.); Steephill Bay (Ven. Guide).

Enteromorpha paradoxa, Kütz. (= *E. erecta*, Harv. and *E. pulcherrima*, Holm. & Batt.). The var. *erecta*, Batt., I. of W. (Batt. Cat.); Niton, as *erecta* (Ven. Guide); grows in deep water at Niton (Parkinson).

E. clathrata, J. Ag. In tide-pools (Ven. Guide).

E. ramulosa, Hook. Medina estuary (P. H. Millidge).

E. compressa, Grev. A common species. I. of W. (Park.); Steephill and Ventnor (Ven. Guide).

E. Linza, J. Ag. St. Lawrence (Ven. Guide).

E. intestinalis, Link. West Cowes (Park. and Ven. Guide); Brighstone, and the Medina and Newtown estuaries (Millidge); the var. *ventricosa*, Le Jol. at Bembridge (Batt. Cat.). "Venables Guide" records *E. Cornucopia*, Kütz. from Ventnor—presumably the variety of this species of that name.

***E. usneoides**, J. Ag. West Cowes (Batt. Cat.).

Ulva Lactuca, L. Recorded in "Venables' Guide" from Steephill Bay; the var. *latissima*, DC. on stones in almost every pool (Park.); Medina and Newtown estuaries (Millidge); Niton (Miss K.).

FAM. CLADOPHORACEAE, WITTR.

Chaetomorpha Linum, Kütz. (= *Conferva sutoria*, Berk.). I. of W. (Batt. Cat.); West Cowes (Miss K., in Ven. Guide).

C. aerea, Kütz. (= *Conferva aerea*, Dillw. and *Chaetomorpha baltica*, Kütz.). I. of W. (Batt. Cat.); on rocks at Niton (Miss K., in Ven. Guide).

C. Melagonium, Kütz. (= *Conferva Melagonium*, Web. & Mohr.). I. of W. (Batt. Cat.); on rocks at Niton, uncommon (Miss K., in Ven. Guide).

Rhizoclonium implexum, Batt. non Kütz. (= *Conferva implexa*, Dillw.). Shanklin Ledge (Ven. Guide).

Cladophora pellucida, Kütz. I. of W. (Batt. Cat.); Niton coast (Miss K., in Ven. Guide); an uncommon species, Niton and Shanklin (Park.).

C. Hutchinsiae, *Harv.* I. of W. (Batt. Cat.); on rocks at Woolverton (Ven. Guide).

C. rectangularis, *Harv.* I. of W. (Batt. Cat.); Niton coast (Miss K. in Ven. Guide); at low water, Niton, rare (Park.).

C. rupestris, *Kütz.* I. of W., a common species (Batt. Cat.); on stones, Steephill (Ven. Guide); in half-tide pools, Steephill (Park.); Brighstone and Freshwater (Millidge); Totland (F. Morey).

C. utriculosa, *Kütz.* (= *C. laetevirens*, *Harv. partim*). Ventnor (Batt. Cat.); Brook (Millidge); as *laetevirens* in "Venables' Guide."

C. gracilis, *Kütz.* I. of W. (Batt. Cat.); at low-water mark, Bonchurch (Park.).

C. sericea, *Kütz.* (= *Conferva laetevirens*, *Dillw.* and *Cladophora crystallina*, *Kütz.*). Ventnor (Batt. Cat.).

***C. corymbifera**, *Kütz.* Cowes, rare (Batt. Cat.).

C. albida, *Kütz.* Cowes (Batt. Cat.); on rocks and Algae (Ven. Guide).

C. refracta, *Aresch.* Niton coast (Miss K., in Ven. Guide).

C. Magdalenae, *Harv.* Freshwater, rare (Batt. Cat.).

C. arcta, *Kütz.* I. of W. (Batt. Cat.); on rocks at half-tide (Ven. Guide); very common, especially in summer (Park.).

C. uncialis, *Kütz.* On the Niton coast (Miss K., in Ven. Guide).

C. lanosa, *Kütz.* On rocks, or parasitic on Algae, Niton and Ventnor (Park.); Niton coast (Miss K., in Ven. Guide).

FAM. BRYOPSIDACEAE, THUR.

Bryopsis plumosa, *Ag.* Ventnor (Batt. Cat.); in tide-pools, south coast of the Island (Ven. Guide); a rare species found at the lowest tides only, between Steephill and Ventnor (Park.).

FAM. SPONGODIACEAE, LAMOUR.

Codium tomentosum, *Stackh.* Steephill and West Cowes (Batt. Cat.).

ORDER: PHAEOPHYCEAE.

FAM. DESMARESTIACEAE, THUR.

Desmarestia aculeata, *Lamour.* I. of W. (Batt. Cat.); deep pools, Steephill (Park.); Shanklin and Brighstone (Millidge); Sandown (Morey).

D. ligulata, *Lamour.* I. of W. (Batt. Cat.); deep water off Steephill (Ven. Guide).

FAM. PUNCTARIACEAE, THUR.

Phloeospora brachiata, Born. (= *Ectocarpus brachiatus*, Harv., et *Stictyosiphon Griffithsianus*, Holm. & Batt.). I. of W. (Batt. Cat.).

Striaria attenuata, Grev. I. of W. (Batt. Cat.); Priory Bay, rare (Miss K., in Ven. Guide).

Punctaria plantaginea, Grev. I. of W. (Batt. Cat.); in sandy pools at low water, Steephill (Ven. Guide); in the muddy stream of Steephill Bay, rare (Park.).

P. latifolia, Grev. I. of W., including the var. *lanceolata*, Batt. (Batt. Cat.); in sandy pools at low water, Steephill (Ven. Guide).

FAM. SCYTOSIPHONACEAE, THUR.

***Phyllitis filiformis**, Batt. I. of W. (Batt. Cat.).

P. Fascia, Kütz. I. of W. (Batt. Cat.); in tide-pools, Culver Cliffs (Ven. Guide); at very low water, Ventnor (Park.).

Scytosiphon lomentarius, J. Ag. (= *Chorda lomentaria*, Lyngb.). I. of W. (Batt. Cat.); Niton coast (Miss K., in Ven. Guide); Fresh-water (Millidge).

FAM. ASPEROCOCCACEAE, FARLOW.

Asperococcus echinatus, Grev. I. of W., including the var. *vermicularis* (Batt. Cat.); on stones in tide-pools, Steephill Bay (Ven. Guide).

A. bullosus, Lamour (= *A. Turneri*, Hook.). I. of W. (Batt. Cat.); on stones in tide-pools, Steephill Bay (Ven. Guide).

FAM. ECTOCARPACEAE, KUTZ.

***Streblonema aequale**, Oltm. I. of W. (Batt. Cat.). This minute parasitic species was recently detected growing at Totland Bay on *Chorda Filum*, by Mrs. E. M. Holmes (Vic. Hist.).

***S. Zanardinii** (= *Ectocarpus Zanardinii*, Crn.). I. of W. (Batt. Cat.).

***Ectocarpus luteolus**, Sauv. I. of W. (Batt. Cat.).

E. siliculosus, Kütz. I. of W. (Batt. Cat.); upon Algae, Steephill Cove (Ven. Guide); found on *Cladophora*, Steephill (Park.).

E. fasciculatus, Harv. I. of W. (Batt. Cat.).

E. tomentosus, Lyngb. I. of W. (Batt. Cat.); upon Algae, Luccombe Ledge (Ven. Guide); on *Fuci*, common, Luccombe (Park.).

E. granulatus, *Ag.* I. of W. (Batt. Cat.); upon Algae, Luccombe Ledge (Ven. Guide).

Pylaiella litoralis, *Kjellm.* I. of W. (Batt. Cat.); Ryde and Niton coast (Miss K., in Ven. Guide); Bonchurch and Steephill (Park.).

FAM. ARTHROCLADIACEAE, THUR.

Arthrocladia villosa, *Duby.* I. of W. (Batt. Cat.); on *Zostera* at extreme low tides, Bonchurch (Park.).

FAM. ELACHISTACEAE, RKE.

Elachistea stellaris, *Aresch.* The var. *Chordae*, epiphytic on several Algae (Batt. Cat.).

E. fucicola, *Fries.* I. of W. (Batt. Cat.); parasitic on *Fucus vesiculosus*, Steephill Bay (Ven. Guide); parasitic on *F. serratus* (Park.).

E. scutulata, *Duby.* (Miss K., in Ven. Guide).

***Giraudia sphacelarioides**, *Derb. et Sol.* Shanklin, rare (Batt. Cat.).

FAM. SPHACELARIACEAE, J. AG.

Sphacelaria cirrhosa, *Ag.* The vars. *pennata*, *irregularis*, *aegagropila*, *nana*, I. of W. (Batt. Cat.); West Cowes, on *Desmarestia aculeata* (Miss K., in Ven. Guide); Ventnor (Mrs. J. E. Gray); the var. *aegagropila*, at Niton (Miss K.).

S. plumigera, *Holmes* (= *S. plumosa*, *Harv. pro parte*). I. of W. (Batt. Cat.); West Cowes (Miss K., in Ven. Guide); Steephill Bay (Park.).

Cladostephus spongiosus, *Ag.* I. of W. (Batt. Cat.); on sandy rocks, Steephill Bay (Ven. Guide).

C. verticillatus, *Ag.* I. of W. (Batt. Cat.); on rocks at low water, St. Lawrence (Ven. Guide).

Halopteris filicina, *Kütz.* (= *Sphacelaria filicina*, *Ag.*). I. of W. (Batt. Cat.); upon *Corallina officinalis* in tide-pools, St. Lawrence (Ven. Guide); on rocks at low water, near Ventnor (Park.); the var. *sertularia*, I. of W., very rare (Batt. Cat.); West Cowes (Miss K., in Ven. Guide); a rare "species" parasitic on *Laminaria*, &c. (Park.).

Stypocaulon scoparium, *Kütz.* (= *Sphacelaria scoparia*, *Ag.*). I. of W. (Batt. Cat.); on rocks, St. Lawrence (Ven. Guide); Brighstone and Brook (Millidge).

FAM. MYRIONEMACEAE, THUR.

Myrionema strangulans, *Grev.* I. of W. (Batt. Cat.).

Ralfsia verrucosa, *Aresch.* I. of W. (Batt. Cat.); Ventnor (Mrs. J. E. Gray).

FAM. CHORDARIACEAE, RKE.

Chordaria flagelliformis, *Ag.* I. of W. (Batt. Cat.); on stones in tide-pools, Ventnor (Ven. Guide).

Mesogloia vermiculata, *Le Jol.* (= *M. vermicularis*, *Ag.*). I. of W. (Batt. Cat.); on sand in tide-pools, Steephill (Ven. Guide).

Castagnea Griffithsiana, *J. Ag.* I. of W. (Batt. Cat.); is on Mr. Hambrough's list in "Venables' Guide."

Leathesia difformis, *Aresch.* (= *L. tuberiformis*, *S. F. Gray*). I. of W. (Batt. Cat.); Niton (Miss K., in Ven. Guide).

FAM. SPOROCHNACEAE, GREV.

Sporochnus pedunculatus, *Ag.* I. of W., rare (Batt. Cat.).

FAM. CHORDACEAE, RKE.

Chorda Filum, *Stackh.* I. of W., including the vars. *thrix* and *subtomentosa* (Batt. Cat.); on stones in tide-pools, St. Lawrence (Ven. Guide); Bembridge (Park.).

FAM. LAMINARIACEAE, THUR.

Laminaria saccharina, *Lamour.* I. of W., including the vars. *Phyllitis* and *linearis* (Batt. Cat.); on stones and rocks at low water, Steephill, also the var. *Phyllitis* in tide-pools, Steephill (Ven. Guide).

L. digitata, *Lamour.* I. of W. (Batt. Cat.); on rocks at low water, Steephill (Ven. Guide); common after a storm, Ventnor (Park.).

L. Cloustoni, *Edm.* (= *L. hyperborea*, *Foslie*). I. of W. (Batt. Cat.).

Saccorhiza bulbosa, *De la Pyl.* (= *Laminaria bulbosa*, *Lamour*). I. of W. (Batt. Cat.); growing profusely 200 yards to the west of Ventnor esplanade at extreme low water (Park.).

Alaria esculenta, *Grev.* I. of W. (Batt. Cat.); reported to be found at Freshwater Gate (Ven. Guide).

FAM. FUCACEAE, J. AG.

Fucus ceranoides, *L.* I. of W. (Batt. Cat.); Medina river, Miss K., and Brading Harbour, A. G. More (Ven. Guide).

***F. platycarpus**, *Thur.* I. of W. (Batt. Cat.).

F. vesiculosus, *L.* On rocks, Steephill, &c. (Ven. Guide); a common species in tidal pools (Park.); everywhere on seashores and in estuaries (Millidge).

F. serratus, *L.* On rocks, Steephill, &c. (Ven. Guide); common (Park.); Sandown and Ventnor (Morey); everywhere on seashores and in estuaries (Millidge).

Ascophyllum nodosum, *Le Jol.* (= *Fucus nodosus*). On rocks, Ventnor, &c. (Ven. Guide); Steephill (Park.); everywhere common (Millidge); Sandown and Totland (Morey).

Pelvetia canaliculata, *Dcne. & Thur.* (= *Fucus canaliculatus*, *L.*). Niton coast (Miss K., in Ven. Guide); mill-pond at St. Helens (A. G. More, in Ven. Guide); at high-water mark, Niton and Steephill (Park.).

Bifurcaria tuberculata, *Stackh.* (= *Pycnophycus tuberculatus*, *Kütz.*). I. of W. (Batt. Cat.); Niton coast, in Watershoot Bay (Miss K., in Ven. Guide).

Himanthalia lorea, *Lyngb.* On rocks below low-water mark, Steephill Cove; often cast ashore at Bembridge (More, in Ven. Guide); Brighstone (Millidge).

Halidrys siliquosa, *Lyngb.* On sandy rocks, Luccombe; also at Bembridge (More, in Ven. Guide); grows profusely from high to low water (Park.); Brighstone, Brook, Freshwater, Shanklin, &c.—a very common species (Millidge); Totland and Sandown (Morey).

Cystoseira ericoides, *Ag.* I. of W. (Batt. Cat.); on rocks at low water at spring tides, St. Lawrence, &c. (Ven. Guide).

C. granulata, *Ag.* I. of W. (Batt. Cat.); in tide-pools, Steephill Bay (Ven. Guide); Brook (Millidge).

C. discors, *Ag.* (= *C. foeniculacea*, *Grev.*). I. of W. (Batt. Cat.); in tide-pools, Steephill Bay (Ven. Guide); Brighstone and Shanklin (Millidge).

C. fibrosa, *Ag.* I. of W. (Batt. Cat.); in three or four-fathom water off Mirables (Ven. Guide).

FAM. DICTYOTACEAE, J. AG.

Dictyota dichotoma, *Lamour.* I. of W., including the var. *implexa* (Batt. Cat.); on rocks at low water, St. Lawrence (Ven. Guide); Shanklin and Freshwater, the var. *implexa (intricata)* at Shanklin (Millidge); Bonechurch (Morey).

Taonia atomaria, *J. Ag.* I. of W. (Batt. Cat.); Sea View (Miss K., in Ven. Guide).

Padina pavonia, *Gaillon*. I. of W. (Batt. Cat.); on sandy rocks, Luccombe Ledge, and at Bembridge (Ven. Guide); Luccombe and Steephill (Park.); Shanklin (Millidge).

Haliseris polypodioides, *Ag.* Puckaster (Batt. Cat.); Puckaster Cove (Miss K., in Ven. Guide).

ORDER: RHODOPHYCEAE, RUPR.

FAM. PORPHYRACEAE, THUR.

***Porphyra leucosticta**, *Thur.* I. of W. (Batt. Cat.).

Wildemannia linearis, *De Tour* (= *P. vulgaris*, *Harv. pro parte*). I. of W. (Batt. Cat.); St. Lawrence (Ven. Guide). Mr. Hambrough, in his list in "Venables' Guide," records *P. vulgaris* as a distinct species from Shanklin, as also does Mr. Millidge from Brook.

W. laciniata, *De Tour*. I. of W. (Batt. Cat.); Steephill Cove (Ven. Guide); Niton (Miss K.).

FAM. HELMINTHOCLADIACEAE, SCHM.

Acrochaetium Daviesii, *Näg.* (= *Callithamnion Daviesii*, *Harv.*). I. of W. (Batt. Cat.); on small Algae (Ven. Guide).

FAM. CHAETANGIACEAE, SCHM.

Scinaia furcellata, *Bivona* (= *Ginnania furcellata*, *Mont.*). I. of W. (Batt. Cat.); drawn up on ropes attached to crab-pots (Miss K., in Ven. Guide).

FAM. GELIDIACEAE, SCHM.

***Harveyella mirabilis**, *Schm. & Rke.* I. of W. (Batt. Cat.). Parasitic on fronds of *Rhodomela subfusca*.

Naccaria wigghii, *Endl.* Shanklin, rare (Batt. Cat.); recorded by Mrs. Lane Clarke from Shanklin in "Common Seaweeds," where she describes it as "a most charming plant, and very rare."

Pterocladia capillacea, *Born.* I. of W. (Batt. Cat.).

Gelidium crinale, *J. Ag.* I. of W. (Batt. Cat.); on rocks, Bonchurch (Ven. Guide).

G. corneum, *Lamour.* I. of W. (Batt. Cat.); West Cowes and Luccombe, on rocks at half tide (Ven. Guide).

G. latifolium, *Born.* Shanklin (Millidge).

G. cartilagineum, *J. Ag.* A species abundant at the Cape of Good Hope, which is recorded by Dr. Withering as having been thrown up on the shore at Freshwater Bay (E. M. Holmes, in Vic. Hist.).

FAM. GIGARTINACEAE, SCHM.

Chondrus crispus, *Stackh.* I. of W. (Batt. Cat.); on rocky shore below waterfalls at Steephill and St. Lawrence (Ven. Guide); Bonchurch, Sandown, and Totland (Morey); plentiful everywhere (Millidge).

Gigartina acicularis, *Lamour.* I. of W., very rare (Batt. Cat.); Brook Ledge (Ven. Guide).

G. pistillata, *Stackh.* This rare species is found at low tide growing on exposed rocks at Steephill (Park.).

G. mamillosa, *J. Ag.* On rocks, Steephill (Ven. Guide).

Phyllophora rubens, *Grev.* I. of W. (Batt. Cat.); Luccombe Ledge (Ven. Guide).

P. Brodiaei, *J. Ag.* I. of W. (Batt. Cat.); Shanklin Ledge (Ven. Guide).

P. membranifolia, *J. Ag.* I. of W. (Batt. Cat.); Luccombe and Atherfield Ledges (Ven. Guide); Brighstone (Millidge); Totland (Morey).

Gymnogongrus Griffithsiae, *Martius.* I. of W., rather rare (Batt. Cat.); at low tides, Steephill Cove (Ven. Guide).

G. Norvegicus, *J. Ag.* (= *Chondrus Norvegicus*). I. of W. (Batt. Cat.); Shanklin Ledge (Ven. Guide); Steephill (Park.).

Ahnfeltia plicata, *Fries* (= *Gymnogongrus plicatus*, *Kütz.*). In tide-pools, Steephill (Ven. Guide).

***Actinococcus aggregatus**, *Schm.* Parasitic on *Gymnogongrus Griffithsiae*. I. of W. (Batt. Cat.).

***A. peltaeformis**, *Schm.* Parasitic on *Gymnogongrus Norvegicus*. I. of W. (Batt. Cat.).

Callophyllis laciniata, *Kütz.* (= *Rhodymenia laciniata*, *Grev.*). I. of W. (Batt. Cat.); Ventnor (Mrs. J. E. Gray); parasitic on *Laminaria* at extreme low water, Ventnor (Park.).

Callymenia reniformis, *J. Ag.* I. of W., rare (Batt. Cat.); Ventnor (Miss K., in Ven. Guide).

Mereditia microphylla, *J. Ag.* (= *Callophyllis microphylla*, *J. Ag.*). I. of W., very rare (Batt. Cat.); Mrs. Gatty says, in "British Seaweeds," that this species is frequently cast ashore in winter-time in Niton Bay.

FAM. RHODOPHYLLIDACEAE, SCHM.

Cystoclonium purpureum, *Batt.* I. of W. (Batt. Cat.); rocky pools, Bonchurch (Ven. Guide—as *Hypnea purpurascens*); Shanklin, Brighstone, Brook, Freshwater—a common species (Millidge).

Catenella Opuntia, *Grev.* I. of W. (Batt. Cat.); on rocks at Luccombe and Puckaster (Ven. Guide); near high-water mark, St. Lawrence (Park.).

Rhodophyllis bifida, *Kütz.* (= *Rhodymenia bifida*, *Grev.*). I. of W. (Batt. Cat.); Ventnor and near Cowes (Miss K., in Ven. Guide); in deep water, Cowes, &c. (Park.).

FAM. SPHAEROCOCCACEAE, SCHM.

Sphaerococcus coronopifolius, *Grev.* I. of W. (Batt. Cat.); Steephill Bay (Ven. Guide); Shanklin and Brook (Millidge); Sandown (Morey); abundant at Niton (Mrs. Gatty).

Gracilaria confervoides, *Grev.* (= *G. dura*, *Tellam.*) I. of W. (Batt. Cat.); on sandy shore, Bonchurch (Ven. Guide).

G. compressa, *Grev.* I. of W., very rare (Batt. Cat.); Sea View (Miss K., in Ven. Guide).

Calliblepharis ciliata, *Kütz.* (= *Rhodymenia ciliata*, *Grev.*). I. of W. (Batt. Cat.); West Cowes (Ven. Guide); Ventnor (Mrs. J. E. Gray); at low tide, or after a gale (Park.); Brighstone, Freshwater, Shanklin (Millidge); Totland and Bonchurch (Morey).

C. jubata, *Grev.* I. of W. (Batt. Cat.); dredged in four or five-fathoms water off Shanklin (Ven. Guide).

FAM. RHODYMENIACEAE, SCHM.

Rhodymenia Palmetta, *Grev.* I. of W. (Batt. Cat.); Sandown (Miss K., in Ven. Guide); Bonchurch (Morey).

R. palmata, *Grev.* Steephill Bay (Ven. Guide); plentiful everywhere (Millidge). This species is known by the name of Dulse.

Cordylecladia erecta, *J. Ag.* (= *Gracilaria erecta*, *Grev.*). I. of W. (Batt. Cat.); on sandy rocks at extreme low tides, Steephill Cove (Ven. Guide).

Lomentaria articulata, *Lyngb.* (= *Chyloccladia articulata*, *Grev.*). I. of W. (Batt. Cat.); on rocks, Bonchurch (Ven. Guide).

Chyloccladia clavellosa, *Grev.* (= *Chrysomenia clavellosa*, *Harv.*). Blackgang (Batt. Cat.); recorded by Miss Kirkpatrick in "Venables' Guide."

Champia parvula, *Harv.* (= *Chyloccladia parvula*, *Hook.*). I. of W. (Batt. Cat.); Watershoot Bay, Niton (Miss K., in Ven. Guide); parasitic on other Algae; found at low water; rare (Park.).

Gastroclonium kaliforme, *And.* Shanklin Ledge (Ven. Guide); Niton (Miss K.).

G. ovale, *Kütz.* Luccombe Ledge (Ven. Guide).

Plocamium coccineum, *Lyngb.* In tide-pools, St. Lawrence (Ven. Guide); plentiful everywhere (Millidge); the var. *uncinatum*, *Ag.* West Cowes (Batt. Cat.).

FAM. DELESSERIACEAE, SCHM.

Nitophyllum punctatum, Grev. I. of W. (Batt. Cat.); Shanklin (Miss K., in Ven. Guide).

N. Gmelini, Grev. I. of W. (Batt. Cat.).

N. laceratum, Grev. West Cowes and Niton (Miss K., in Ven. Guide); grows close to rocks at low water (Park.). The var. *uncinatum*, J. Ag. West Cowes, very rare (Batt. Cat.); recorded by Miss Kirkpatrick in "Venables' Guide."

N. Hilliae, Grev. I. of W. (Batt. Cat.); Bonchurch, rare (Park.).

Delesseria sinuosa, Lamour. Steephill Bay (Ven. Guide); Gurnard (Millidge).

Delesseria sanguinea, Lamour (= *Hydrolapathum sanguineum*, Stackh.). In deep water, Niton and Shanklin (Ven. Guide); Steephill (Park.); Freshwater, Brighstone (Millidge); Sandown (Morey).

Pteridium alatum, J. Ag. (= *Delesseria alata*, Lam.). On rocks and Algae, St. Lawrence (Ven. Guide); Shanklin (Park.); Brighstone, Freshwater (Millidge).

Apoglossum ruscifolium, J. Ag. (= *Delesseria ruscifolia*, Lam.). I. of W. (Batt. Cat.); Ventnor (Mrs. J. E. Gray); West Cowes (Miss K.).

Hypoglossum Woodwardii, Kütz. (= *Delesseria Hypoglossum*, Lam.). Shanklin Ledge (Ven. Guide).

FAM. BONNEMAISONIACEAE, SCHM.

Bonnemaisionia asparagoides, Ag. I. of W. (Batt. Cat.); found occasionally at low water between Shanklin and Luccombe (Park.).

***B. hamifera**, Hariot. Shanklin, rare (Batt. Cat.); found growing on rocks at low water at Shanklin, by Mr. E. George, in 1897; the species, which is a native of Japan, had been noticed a few months previously at Falmouth, and seems now to have become naturalized at both of these localities. (E. M. Holmes, in Vic. Hist.).

FAM. RHODOMELACEAE, SCHM.

Rhodomela subfusca, Ag. Whitecliff Bay (Ven. Guide); Brighstone (Millidge).

Laurencia obtusa, Lamour. I. of W. (Batt. Cat.); on *Laminaria*, at Luccombe (Ven. Guide).

L. caespitosa, Lamour. On sandy rocks, Luccombe Ledge (Ven. Guide).

L. pinnatifida, *Lamour.* On rocks, Ventnor (Ven. Guide); a common species (Park.); Freshwater and Brook (Millidge).

Halopitys pinastroides, *Kütz.* I. of W. (Batt. Cat.); on rocks in tide-pools, Steephill Bay (Ven. Guide); Brighstone, Brook, Freshwater, Shanklin (Millidge); Totland and Sandown (Morey).

Chondria tenuissima, *Ag.* (= *Laurencia tenuissima*, *Harv.*). I. of W. (Batt. Cat.); in tide-pools on sandy rocks, Steephill Bay (Ven. Guide).

C. dasyphylla, *Ag.* (= *Laurencia dasyphylla*, *Grev.*). I. of W. (Batt. Cat.); on the Niton coast (Miss K., in Ven. Guide); at low-water mark, Niton (Park.).

Polysiphonia macrocarpa, *Harv.* (= *P. pulvinata* & *P. sertularioides*). I. of W. (Batt. Cat.); on rocks, Steephill Cove (Ven. Guide).

P. fibrata, *Harv.* On *Laminaria*, Steephill Bay (Ven. Guide).

P. urceolata, *Grev.* Sea View (Miss K., in Ven. Guide); grows on *Laminaria* in hair-like tufts (Park.); Brighstone (Millidge); Bonchurch (Morey); the var. *formosa*, *J. Ag.*, sandy rocks in tide-pools, St. Lawrence (Ven. Guide).

P. elongella, *Harv.* I. of W. (Batt. Cat.); Luccombe, on stems of *Laminaria* (Ven. Guide); at low water, uncommon (Park.).

P. elongata, *Grev.* Shanklin (Ven. Guide).

P. fibrillosa, *Grev.* I. of W. (Batt. Cat.); recorded in "Venables' Guide."

P. variegata, *Zan.* I. of W., very rare (Batt. Cat.); grows on *Zostera* at low tide only, Steephill Bay (Park.).

P. fastigiata, *Grev.* Very common wherever its host-plant—*Ascophyllum nodosum*—grows (Batt. Cat.); on Algae and rocks (Miss K., in Ven. Guide); on rocks, Steephill Bay (Park.); Shanklin, Brighstone, Freshwater (Millidge); Totland, Bonchurch, &c. (Morey).

P. atro-rubescens, *Grev.* On the Niton coast (Miss K., in Ven. Guide); at low tide only; common at Steephill and Niton (Park.); the var. *Agardhiana* on sand at extreme low tides, Steephill Cove (Ven. Guide).

P. nigrescens, *Grev.* Steephill Bay (Ven. Guide); parasitic on *Fuci* and other Algae (Park.); Brighstone and Brook (Millidge).

P. Brodiaei, *Grev.* I. of W. (Batt. Cat.); on the Niton coast (Miss K., in Ven. Guide).

P. fruticulosa, *Spreng.* (= *Rytiphloea fruticulosa*, *Harv.*). I. of W. (Batt. Cat.); Steephill Bay (Ven. Guide).

P. thuyoides, *Schm.* (= *Rytiphloea thuyoides*, *Harv.*). I. of W. (Batt. Cat.); Watershoot Bay, Niton (Miss K., in Ven. Guide).

Pterosiphonia parasitica, *Schm.* (= *Polysiphonia parasitica*, *Grev.*). I. of W. (Batt. Cat.); Puckaster Cove (Miss K., in Ven. Guide).

Brongniartella byssoides, *Bory* (= *Polysiphonia byssoides*, *Grev.*). On stems of *Laminaria*, Steephill (Ven. Guide); Shanklin (Millidge).

Dasya arbuscula, *Ag.* I. of W. (Batt. Cat.); at low water, Shanklin and Ventnor (Park.).

Heterosiphonia plumosa, *Batt.* (= *Dasya coccinea*, *Ag.*). In tide-pools, St. Lawrence (Ven. Guide); Sandown (Morey); Brighstone, Brook, Freshwater, Shanklin—very common (Millidge); Niton (Miss K.). Miss K. also records *Dasya tenuior* from Niton and West Cowes: presumably this was what is now regarded as a variety of this species.

FAM. CERAMIACEAE, SCHM.

Sphondylothamnion multifidum, *Näg.* (= *Wrangelia multifida*, *J. Ag.*). Dredged off Luccombe (Ven. Guide).

Spermothamnion Turneri, *Aresch.* (= *Callithamnion Turneri*, *Ag.*). Upon Algae, Luccombe Ledge (Ven. Guide).

S. barbatum, *Born.* (= *Callithamnion barbatum*, *Ag.*). The var. *mesocarpum*, *Batt.* (*Callithamnion mesocarpum*, *Carm.*) is recorded from Ventnor by Mrs. J. E. Gray.

***Trailliella intricata**, *Batt.* (= *Callithamnion intricatum*, *J. Ag.*). I. of W. (Batt. Cat.).

Griffithsia corallina, *Ag.* Sandy pools, Luccombe Ledge (Ven. Guide); Freshwater (Millidge).

G. setacea, *Ag.* On rocks, Bonchurch (Ven. Guide); Shanklin and Brook (Millidge).

Halurus equisetifolius, *Kütz.* (= *Griffithsia equisetifolia*, *Ag.*). Niton, in tide-pools (Ven. Guide); Steephill Bay (Park.); Brighstone, Shanklin, Freshwater (Millidge); Sandown (Morey); the var. *simplicifolium*, *J. Ag.*, at Freshwater, very rare (Batt. Cat.).

Monospora pedicellata, *Sol.* (= *Callithamnion pedicellatum*, *Ag.*). I. of W. (Batt. Cat.); Bonchurch (Morey).

Pleonosporium Borreri, *Näg.* (= *Callithamnion Borreri*, *Harv.*). I. of W. (Batt. Cat.); on the Niton coast (Miss K., in Ven. Guide).

Rhodochorton Rothii, *Näg.* (= *Callithamnion Rothii*, *Lyngb.*). On rocks, St. Lawrence (Ven. Guide); very plentiful at half tide in muddy spots, St. Lawrence (Park.).

R. floridulum, *Näg.* (= *Callithamnion floridulum*, *Ag.*). Shanklin (Millidge).

Callithamnion byssoides, *Arn.* I. of W. (Batt. Cat.); parasitic on Algae, Steephill Bay (Park.); Shanklin (Morey).

C. polyspermum, *Ag.* Luccombe Ledge (Ven. Guide); common on *Fuci*, often choking the growth (Park.).

C. roseum, *Harv.* I. of W. (Batt. Cat.); upon Algae, St. Lawrence (Ven. Guide); in muddy pools (Park.).

C. Hookeri, *Ag.* I. of W. (Batt. Cat.); on rocks, St. Lawrence (Park.).

C. Brodiaei, *Harv.* I. of W. (Batt. Cat.); upon Algae, Steephill (Ven. Guide).

C. arbuscula, *Lyngb.* Shanklin (Batt. Cat.); dredged off Shanklin, and on rocks in Watershoot Bay, Niton (Miss K., in Ven. Guide); on rocks at low water, Shanklin (Park.). Mr. Holmes regards this record as a mistake, and thinks that another kind has been confused with this—*arbuscula* being a northern species. Mr. Batters, however, in his catalogue, gives the Channel Islands also as a locality, though all the other records are from the north. Probably an error in identification has been made in both cases.

C. tetragonum, *Ag.* I. of W. (Batt. Cat.); upon Algae, St. Lawrence (Ven. Guide); very common (Park.); Freshwater (Millidge); Bonchurch (Morey). The var. *brachiatum*, *J. Ag.* (*C. brachiatum*, *Harv.*) on Algae (Ven. Guide).

C. tetricum, *Ag.* I. of W. (Batt. Cat.); on rocks, Steephill Bay (Ven. Guide); at low water in exposed situations, common (Park.).

C. corymbosum, *Lyngb.* Gurnard Bay and Niton (Miss K., in Ven. Guide); found at low water, Niton (Park.).

C. granulatum, *Ag.* (= *C. spongiosum*, *Harv.*). I. of W. (Batt. Cat.); upon Algae, Steephill (Ven. Guide).

Plumaria elegans, *Schm.* (= *Ptilota sericea*, *Harv.*). On rocks and *Laminaria*, Steephill, Niton, and Bonchurch (Ven. Guide); Freshwater (Millidge).

Antithamnion cruciatum, *Näg.* (= *Callithamnion cruciatum*, *Ag.*). I. of W. (Batt. Cat.); Lucombe Ledge (Ven. Guide); on muddy rocks at low tide (Park.).

A. Plumula, *Thur.* I. of W. (Batt. Cat.); West Cowes and Niton (Miss K., in Ven. Guide).

Spyridia filamentosa, *Harv.* I. of W. (Batt. Cat.); in sandy pools, Steephill (Ven. Guide); Shanklin (Millidge); Blackgang (Mrs. Gatty).

Ceramium tenuissimum, *J. Ag.* (= *C. nodosum*, *Harv.*). I. of W. (Batt. Cat.); on small Algae and sandy rocks, Ventnor (Ven. Guide); on *Zostera*, or in sandy pools at low tide, Ventnor (Park.).

C. diaphanum, *Roth.* Sandy tide-pools, St. Lawrence (Ven. Guide).

C. botryocarpum, *Griff.* I. of W. (Batt. Cat.); on small Algae, Steephill Bay (Ven. Guide).

C. rubrum, *Ag.* Steephill and Bonchurch, on Algae (Ven. Guide); in tidal pools (Park.); Sandown and Totland (Morey); very common everywhere (Millidge).

C. flabelligerum, *J. Ag.* I. of W. (Batt. Cat.); Ventnor (Mrs. J. E. Gray).

C. echionotum, *J. Ag.* I. of W. (Batt. Cat.); on the smaller Algae, Bonchurch (Ven. Guide).

C. ciliatum, *Ducluz.* I. of W. (Batt. Cat.); sandy pools, Bonchurch (Ven. Guide).

C. acanthonotum, *Carm.* Sandy pools, St. Lawrence (Ven. Guide).

FAM. DUMONTIACEAE, SCHM.

Dumontia filiformis, *Grev.* On stones, St. Lawrence (Ven. Guide); Brook (Millidge).

Dilsea edulis, *Stackh.* (= *Iridaea edulis*, *Harv.*). In tide-pools, St. Lawrence (Ven. Guide).

FAM. NEMASTOMACEAE, SCHM.

Halarachnion ligulatum, *Kütz.* (= *Halymenia ligulata*, *Ag.*). I. of W. (Batt. Cat.); Reeth Bay, Niton (Miss K., in Ven. Guide).

Furcellaria fastigiata, *Lamour.* On rocks at edge of low water, Steephill and Ventnor (Ven. Guide); plentiful everywhere (Millidge); Totland and Sandown (Morey).

FAM. RHIZOPHILLIDACEAE, SCHM.

Polyides rotundus, *Grev.* In tide-pools, St. Lawrence (Ven. Guide).

FAM. SQUAMARIACEAE, SCHM.

Petrocelis cruenta, *J. Ag.* (= *Cruoria pellita*, *Harv.*). I. of W. (Batt. Cat.).

FAM. CORALLINACEAE, SCHM.

***Choreonema Thureti**, *Schm.* (= *Melobesia Thureti*, *Born.*). I. of W. (Batt. Cat.).

Lithothamnion lichenoides, *Fosl.* (= *Melobesia lichenoides*, *Harv.*). On stones, Brook Ledge (Ven. Guide).

Phymatolithon polymorphum, *Fosl.* (= *Melobesia polymorpha*, *Harv.*). On stones and rocks, Steephill Bay (Ven. Guide).

Corallina officinalis, *L.* Steephill and St. Lawrence, on sandy rocks, &c. (Ven. Guide); common at Ventnor (Park.); Shanklin, Brook, Freshwater (Millidge); Sandown (Morey).

C. squamata, *Ellis.* I. of W. (Batt. Cat.); on the Niton coast. (Miss K., in Ven. Guide).

C. rubens, *Ellis and Solan.* (= *Jania rubens*, *Lam.*). Luccombe Ledge, &c. (Ven. Guide); St. Lawrence (Park.); Shanklin and Brook (Millidge); the var. *corniculata*, at Steephill Bay (Ven. Guide).

The most important works on British Seaweeds are "Phycologia Britannica," by W. H. Harvey, 1851, which describes and figures all the species then known as British: the cost is about four pounds. A more popular book is "British Seaweeds," by Mrs. Gatty, 1872, which may be purchased, second hand, for about a pound. It is based on Harvey's great work, and is fully illustrated. Other popular works are Miss Giffard's "Marine Botanist," and Landsborough's "British Seaweeds." There is also Gray's "British Seaweeds," which can be bought for about 3/6.

Mr. Holmes writes me that he would recommend anyone searching our northern coasts for Algae to consult Kjellman's "Algae of the Arctic Sea"; and those working our southern shores, Crouan's "Florule du Finistère." Both of these works have illustrations of species recently discovered on the British coasts.

There is no modern book which gives descriptions of all the British species; those which have been discovered during the last half century having been recorded in the botanical journals, especially in "Grevillea" and the "Journal of Botany." The latest complete catalogue of British Seaweeds has already been referred to in the preface to the foregoing list.

LICHENS.

By J. A. WHELDON, F.L.S.,

Vice-President of the Liverpool Botanical Society.

IN the majority of our local Floras the Lichen lists are usually less complete and exhaustive than those of other groups of plants, and the one now presented is probably no exception, embracing as it does only about 240 forms out of the 1700 or so believed to occur in Britain. A careful survey of the rocky parts of the coast, and of tree trunks inland, should lead to the discovery of many other species in a district so favourably situated as the Isle of Wight.

The Island possesses a pure air, and this and a fair supply of atmospheric moisture appear to be the prime requisites of these humble plants. We consequently find them in the greatest abundance in maritime or mountainous districts, and in greatly diminished numbers or nearly totally absent in the vicinity of large cities or manufacturing districts.

But there is much work to be done before we can accurately gauge the distribution of the British species, and it will probably be many years before students of the Lichens are as fortunately situated in this respect as are those of flowering plants, mosses, and liverworts. Whilst other groups of Cryptogams have many investigators, the Lichens are generally neglected, and they are usually crowded out in manuals of botany and local floras as severely as they are in nature, where they are driven to thrive in the barest and most barren situations.

Yet to the contemplative nature-student these singular plants are very attractive. A feeling akin to veneration arises when we regard their slow rate of growth and the probable antiquity of some of the hoary fronds which lend softness to the rugged rocks. What, indeed, could be more pleasing to the artistic eye than their delicate tracery, enshrouding the mouldering tombstones of some old churchyard, or fringing the ancient trunk of some patriarchal tree of the

park or forest? In such situations their beauty is admitted, and the artist fully avails himself of the softening influence of their delicate shades in his landscapes.

Unlike many things of purely artistic value, Lichens are not without their uses. Mosses and hepatics—much more attractive to students—must yield the first place to them for utility to man. Apart from their indirect usefulness, according to oecologists, in preparing the way for higher plants (as to the importance of which one may be excused for assuming a somewhat sceptical attitude), they are in many ways of direct benefit to man. *Cetraria islandica* is used medicinally as a tonic and demulcent, and in Iceland it is boiled in milk as a food. In Africa, *Lecanora esculenta* is collected from the desert plains and used as food for man and horses, either boiled or ground into flour from which a kind of bread is made. There can be but little doubt that this Lichen represents the manna of the Scriptures. In more Arctic regions, *Cladonia rangiferina* and allied species are invaluable as food for reindeer and cattle, and an alcoholic beverage is also prepared from them. Several kinds of *Roccella*, *Lecanora*, and *Parmelia* are used in the preparation of dyes. These Lichen colours were formerly of greater importance than they now are, but even in these days of synthetic chemistry, cudbear, archil, and litmus (obtained from *Roccella tinctoria*) have their value. The species of *Gyrophora* known as *tripe de roche* possess nutritive properties, and it is said that Franklin and his companions, when in the Arctic regions in 1821, owed their preservation largely to them. Several Lichens were used in ancient times as medicine; thus *Cladonia pyxidata* was employed as a remedy in whooping cough, *Parmelia perlata* as a diuretic, *Stictia pulmonaria* or Lungwort in cases of phthisis, and *Peltigera canina* as a specific in cases of hydrophobia.

A still greater incitement to the study of Lichens than their officinal or artistic properties is the mystery surrounding their nature and position in the scheme of botanical classification. De Bary, in 1866, first threw out the suggestion that Lichens were not autonomous plants. His pupil Schwendener followed up the idea and endeavoured to prove experimentally their dual nature. He contended that Lichens consist of certain species of algae, living in close communion with fungi, the result of this "commensalism" or "symbiosis" being the formation of a "consortium" or Lichen thallus. As is well known, a chief characteristic of fungi is the absence of the green granules known as chlorophyll from their tissues. The green gonidial layer of the Lichens serves to readily distinguish them from the fungi. Schwendener, as also Bornet, Stahl, and others following him, holds that these gonidia are merely imprisoned algae, and have no organic connection with the fungus hyphae. Their conclusions, although as yet hardly quite convincingly proved, are very widely accepted by certain schools of botanists. Systematists, on the other hand, especially writers on the Lichens, do not yet appear willing to relegate them to the Algae and Fungi,

and continue to treat them as a separate class. Nor do any of our leading fungologists include them in their handbooks. This is the most satisfactory course. Even if ultimately relegated to the fungi, they will always remain abundantly distinct from the true fungi in their structure, properties, and attributes.

Apart from their claims to notice already discussed, we may plead for more workers in the field from another standpoint. It is alleged that they are a disappearing race in the British Isles, and to some extent this is true. The draining of the land; the disappearance of woods and forests; the cultivation of wastes and commons; the paring of peat-lands for commercial purposes; the pollution of air and streams by smoke and other effluents in manufacturing centres; the surrounding of our coasts by a line of golf-links and asphalte promenades; and the gradual alteration in the climatic conditions of the country are rapidly diminishing the numbers of these and other plants. But Lichens are perhaps more than any other tribe of plants sensitive to these influences, and especially to smoke—first becoming sterile, then stunted, and ultimately disappearing. Before it is too late it is desirable that neglected areas should be fully investigated, and the species they yield put on record. One or two zealous students, after a few years application, should succeed in greatly extending the list of species given below. As the microscope is now a comparatively cheap instrument, and an increasing number of people are able to use it intelligently, it is not too much to hope that some may be induced to abandon the collecting of pretty slides of assorted objects and seriously enter upon the study of these interesting plants. They may have the sure and certain hope of being able to add to the sum of human knowledge, and to leave behind them records and specimens which will be of service to future generations of botanists, and which are now in imminent danger of being lost for ever.

A brief epitome of the broad features of Lichen structure may be of interest to the reader. The vegetative portion is called the *thallus*. It is exceedingly variable in external shape and appearance, but may be regarded as consisting essentially of two strata of interlacing slender tubes, resembling the *hyphae* of fungi, with a layer of coloured cells sandwiched between them. This latter layer usually consists of small green cells called *gonidia*, and lies nearer to the upper surface than the lower in order to receive as much light as possible. These alga-like cells were once thought to lie free amongst the network of hyphal filaments, but Dr. Salter has shown that all parts of the Lichen structure are intimately connected in a true anatomical union. One of the principal exceptions to this general type of thallus is found in the members of the *Collema*cei, curious *nostoc-like* plants, in which the hyphae and gonidia are not stratified, but scattered throughout the gelatinous substance of the thallus. A few groups exhibit a distinctly membranous thallus, showing in section a regular cellular appearance, which is said,

however, to consist of the usual anastomosing fungal filaments. Characters of great service in classifying the species into groups are derived from the variability of the thallus in texture and appearance. In addition to the gelatinous and cellular forms already referred to, may be mentioned the commoner states in which the thallus is *crustaceous*, *foliaceous*, *filamentous*, or *fruticulose*. Sometimes it is *evanescent*, when the fruit is the most conspicuous part of the plant; or *hypophloeodal*—in the latter case spreading under the cuticle of trees, the fruit alone appearing on the surface. Some species of *Lecidea*, *Arthonia*, and *Verrucaria* appear to have no proper thallus, but grow parasitically upon that of other Lichens, or on their apothecia.

The reproduction of Lichens takes place by both asexual and sexual methods. In the former case, small folioles or scales become detached from the parent thallus, and if carried by wind or animals to a suitable habitat, they continue to grow and start a fresh colony. A still more prolific method of reproduction is by means of *soredia*. These occur on the thallus as small heaps of greyish or yellowish powder, and consist of a mixture of broken-down filaments and gonidia. Many species which rarely or never fruit with us, multiply freely by these two asexual methods. It is possible that others are propagated by bodies termed *pycnides*, and the yellowish powder found in the *pseudocyphellae* of the *Stictici* may also serve a similar purpose, although this does not seem to have been demonstrated. The sexual processes of Lichens are not so well understood as those of the mosses and hepatics. Small blackish dots may be seen scattered over the thallus of most species, much smaller in size than the shields or apothecia. These are believed to be the male organs and are called *spermogones*. They consist of clusters of simple (*sterigmata*) or jointed (*arthrosterigmata*) filaments, which are mostly embedded in the thallus, from which are developed myriads of minute, granular or rod-shaped bodies (*spermatia*). These latter vary much in size, and may be straight or curved. On crushing a spermogone in a drop of water between two glass slides, they may be seen under the microscope to issue in a dense cloud. They have not been proved to possess any motile filaments, but it is supposed that during showers they are able to reach and enter the *tricogyne* and fuse with its egg-cell. The latter commences to develop and fructify, and, with the surrounding tissues, which also appear to be stimulated, forms the well known shield or *apothecium*. Dr. Darbishire has traced some of the earlier stages which result in the production of fruit, and has discovered that the development of the *tricogyne* resembles that of the similar organ of the Red Algae, from which cystocarps are developed. A typical *apothecium* consists of many sacs or *asci* mingled with *paraphyses*, which are arranged perpendicularly on an expanded receptacle or *hypothecium*, the whole being surrounded by an *excipulum*, the edges of which frequently form a margin (called a *proper margin*) to the disc of the

shields. An additional *thalline margin* is sometimes supplied by a raised fold of the thallus, and this is often, as in *Lecanora*, the only one evident. The apothecia usually rest on, or are slightly immersed in, the thallus, but sometimes they appear to be almost completely immersed, only communicating with the surface by a small *ostiole*. In a few genera stalked apothecia occur, the stalk being called a *podetium*. Each *ascus* usually contains eight spores, termed *ascospores*. Occasionally only two, four, or six are developed, and a few species are polysporous. The spores vary much in size and shape, and are either *simple* or variously *septate*. They are coloured or colourless, and not only form pretty and interesting objects, but are of great value in the determination of the species.

Intending students of the Lichens would do well to familiarise themselves with the peculiar terms used by lichenographers in describing the species. Leighton and others have been accused of pedantry in employing so many special terms; but the necessary accuracy combined with brevity was thus secured, sometimes enabling an idea to be expressed in a single word which would have required a whole sentence of ordinary English.

Leighton's "Lichen Flora of Great Britain," 3rd edition, 1879, is recommended as a good handbook; it contains a useful glossary. An older, but very admirable, work is Mudd's "Manual of British Lichens," 1861, in which many figures of spores are given. Crombie's "British Lichens" is perhaps our most valuable work; the second part, which has long been wanted, is announced for publication shortly. Lindsay's "Popular History of British Lichens," 1856, may still be picked up for a few shillings. It contains excellent plates. A useful book in French is Boistel's "Nouvelle Flore des Lichens," 1896. Part I., 1178 illustrations, 5/-. Part II., 1900, 6/- (Dulau & Co.).

[The following list of Island Lichens has been compiled by the Rev. H. M. Livens, with the kind assistance of Mr. Wheldon, from specimens collected by himself and others, and from published records.—EDITOR.]

COLLEMACEI.

Lichina pygmaea, *Nyl.* Frequent on the tide-washed rocks about Ventnor (Rev. A. Bloxam); I. of W. (British Museum Catalogue, compiled by Rev. J. M. Crombie).

Collema furvum, *Ach.* I. of W. (Dr. Holl); Shanklin (Rev. T. Salwey).

C. flaccidum, *Ach.* On rocks. St. John's (B.M.Cat.); the Landslip (Bloxam).

C. pulposum, *Ach.* On rocks, chalk, and trees. Common. Carisbrooke Castle, Undercliff, Shanklin, Garstons and Brighstone Downs, &c. (Rev. H. M. Livens).

C. tenax, *Ach.* On earth. Luccombe (B.M.Cat.).

C. crispum, *Ach.* On rocks. Not uncommon. St. Lawrence, Sandown (B.M.Cat.); the Landslip (Bloxam).

C. cheileum, *Ach.* Shanklin (Dr. Holl); among moss on stone wall, Northwood Park, and at Newport (J. F. Rayner).

C. cheileum, *forma nudum*, *Ach.* On walls and calcareous rocks. Shanklin (B.M.Cat.).

C. granuliferum, *Nyl.* Shanklin (B.M.Cat.); Carisbrooke Castle (H.M.L.).

C. melaenum, *Ach. f. jacobaeifolium*, *Ach.* I. of W. (B.M.Cat.).

C. polycarpon, *Koerb.* On rock, Landslip (H.M.L.).

C. nigrescens, *Ach.* On trees. Common. Ryde, Carisbrooke Castle, Shanklin (H.M.L.); on old railing, Combley Wood (J.F.R.).

Collemodium turgidum, *Nyl.* Shanklin (B.M.Cat.).

C. Schraderi, *Nyl.* Among mosses on calcareous soil. Shanklin (B.M.Cat.).

Leptogium tenuissimum, *Koerb.* On mossy earth. Sandown (B.M.Cat.); Shanklin (Dr. Holl).

L. subtile, *Nyl.* Shanklin (Salwey); Luccombe, Bonchurch (B.M.Cat.).

L. cretaceum, *Nyl.* On chalk and flint. I. of W. (B.M.Cat.).

L. lacerum, *Nyl.* On mossy rocks and walls. Ventnor (B.M.Cat.); on moss, Landslip (H.M.L.); near Shanklin (Dr. Holl).

L. lacerum, *f. fimbriatum*, *Nyl.* On mossy rocks and walls. Luccombe (B.M.Cat.).

L. pulvinatum, *Nyl.* On mossy rocks. Bonchurch, Luccombe (B.M.Cat.).

L. sinuatum, *Gray.* On old mossy walls. St. Lawrence (B.M. Cat.).

L. tremelloides, *Gray.* On sub-alpine and maritime rocks. St. Lawrence (B.M.Cat.).

Myriangium Durioei, *Mnt. & Berk.* On ash and elm. I. of W. (Salwey); near Shanklin (Dr. Holl).

LICHENACEI.

EPICONIODEI.

Sphinctrina turbinata, *Fr.* On *Pertusaria communis*, *D.C.* Ventnor (B.M.Cat.).

Calicium curtum, *Turn.* On wood, pales, &c. On old gable-post, America Woods (Salwey).

Coniocybe furfuracea, *Ach.* On roots of trees and sandy ground. Shanklin (Borrer).

CLADODEI.

Baeomyces rufus, *D.C.* On earth and stones. I. of W. (B.M. Cat.).

Cladonia alcicornis, *Flrk.* Dry heaths. I. of W. (B.M. Cat.).

C. pyxidata, *Fr.* On the ground, walls, base of trees. Common. St. George's Down, Parkhurst, Landslip (H.M.L.).

C. pyxidata, *var. chlorophoea*, *Flörke*, *f. lepidophora*, *Flörke.* On bank and pine stump, Parkhurst Forest (H.M.L.).

C. fimbriata, *Fr.* On ground, Blackwater (H.M.L.); on banks, (Bloxam).

C. fimbriata, *var. subcornuta*, *Nyl.* Bleak Down (H.M.L.).

C. cornuta, *Fr.* On banks (Bloxam).

C. furcata. On the ground. Common. Firestone Copse (J.F.R.); Ashey Down, &c. (H.M.L.).

C. furcata, *f. corymbosa*, *Nyl.* St. George's Down (H.M.L.).

C. pungens, *Flörke.* Hilly slopes. I. of W. (B.M. Cat.).

C. squamosa, *Hoffm.*, *sub-species C. adpersa*, *Nyl.* Shanklin Downs (B.M. Cat.).

C. subsquamosa, *Nyl.* In woods and on rocks. Shanklin (B.M. Cat.).

C. coccifera, *Schaer.* On banks. Shanklin (B.M. Cat.); I. of W. (Bloxam).

C. macilenta, *Hoffm.* On turfy heaths. St. George's Down (H.M.L.).

Cladina sylvatica, *Nyl.* Shanklin Down (B.M. Cat.); St. George's Down (H.M.L.).

RAMALODEI.

Roccella phycopsis, *Ach.* On rock and stonework. Frequent. St. Helens and Godshill Churches, Shanklin and Bembridge (A. G. More); Godshill Church (H.M.L.).

Ro. tinctoria, *D.C.* On rock and stonework. Frequent. On old church, St. Helens, and on Godshill Church (A. G. More).

Ro. fuciformis, *Ach.* Rocks. I. of W. (Victoria Hist. of Hants).

Ramalina calicaris, *Nyl.* On trees. Frequent. Marvel Copse (H.M.L.); Freshwater (Vic. Hist. Hants).

R. farinacea, *Ach.* On trees. Common. Carisbrooke (B.M. Cat.); Carisbrooke (H.M.L.).

R. fraxinea, *Ach.* On trees and hedges. Very common. The Undercliff, Arreton Down, Sheat, &c. (H.M.L.).

R. fraxinea, *var. ampliata*, *Ach.* On trees. On elm, Gatcombe (H.M.L.).

R. fastigiata, *Ach.* On trees. Common. Near Ryde (B.M.Cat.); Firestone Copse (J.F.R.).

R. polymorpha, *Ach.* On rocks, Niton (Bloxam).

R. polymorpha, *var. ligulata*, *Ach.* Shanklin Church (Salwey); on stone wall, Niton (H.M.L.).

R. pollinaria, *Ach.* On trees. Common. Near Ryde (B.M.Cat.); Carisbrooke (Reader).

R. evernioides, *Nyl.* On trees, palings, &c. Bembridge (B.M.Cat.); I. of W. (Salwey).

R. scopulorum, *Ach.* On rocks near the coast (Bloxam); Carisbrooke (Rev. H. P. Reader).

R. subfarinacea, *Nyl.* On sub-alpine and maritime rocks. Niton (Reader).

R. cuspidata, *Ach.* Rocks. I. of W. (Vic. Hist. Hants).

Usnea hirta, *Hoffm.* On trees, especially oaks. Frequent. Westover Plantation, Newbarn Down, Gatcombe (H.M.L.).

U. ceratina, *Ach.* On trees. I. of W. (B.M.Cat.).

U. ceratina, *f. ferruginascens*, *Cromb.* On oak, Combley Wood (H.M.L.).

U. articulata, *Hoffm.* On trees. Appuldurcombe, Ventnor (B.M.Cat.).

Cetraria aculeata, *Fr.* I. of W. (H.M.L.).

Platysma glaucum, *Nyl.* I. of W. (H.M.L.).

Evernia prunastri, *Ach.* On trees, especially oaks. Frequent. Westover Plantation (H.M.L.).

Parmelia perlata, *Ach.* On trees. Common. I. of W. (B.M.Cat.); Appuldurcombe, St. George's Down, Parkhurst (H.M.L.).

P. ciliata, *Nyl.* On trees and rocks. I. of W. (B.M.Cat.).

P. cetrarioides, *Nyl.* On trees and stones. I. of W. (B.M.Cat.).

P. perforata, *Ach.* On rocks and trees. Carisbrooke, Ryde (B.M.Cat.).

P. revoluta, *Nyl.* On trees. I. of W. (B.M.Cat.); copse, Newbarn Down (H.M.L.).

P. tiliacea, *Ach.* On trees. Near Ryde (B.M.Cat.).

P. scorteae, *Ach.* On trees, not common (Bloxam); Shanklin (B.M.Cat.).

P. Borreri, *Turn.* On trees. Ryde (Dr. Holl); Shanklin (B.M.Cat.); Newbarn Down (H.M.L.).

P. saxatilis, *Ach.* On trees. Luccombe Chine (Bloxam).

P. sulcata, *Tayl.* On trees and walls. Common. Westover Plantation, Combley Wood, Steephill (H.M.L.).

P. sulcata, *var. laevis*, *Nyl.* On trees, I. of W. (H.M.L.).

P. caperata, *Ach.* On trees, especially oak and beech. Very

common. Appuldurcombe, Westover Plantation, Carisbrooke, &c. (H.M.L.).

P. Delisei, *Nyl.* On rocks. Near Shanklin (B.M.Cat.); on roof of shed, Blackwater (H.M.L.).

P. fuliginosa, *Nyl. var. laetevirens*, *Nyl.* On trees. Marvel Copse (H.M.L.).

P. physodes, *Ach.* On trees. Common. Steephill, Westover Plantation, copse on Newbarn Down (H.M.L.).

P. physodes, *f. platyphylla*, *Ach.* On rocks. Brading (B.M.Cat.).

P. physodes, *var. labrosa*, *Ach.* On trees. Westover Plantation (H.M.L.).

Stictina fuliginosa, *Nyl.* On rocks and trees. I. of W. (B.M.Cat.).

Sticta sylvatica, *Nyl.* On trees. Common. Appuldurcombe, Shanklin (Bloxam).

S. limbata, *Nyl.* On trees. Common. Ryde, Shanklin, Appuldurcombe, and Quarr Wood (Bloxam).

S. aurata, *Ach.* On trees. Rare. Ryde, Shanklin (Bloxam); Ventnor (B.M.Cat.).

Lobarina scrobiculata, *Nyl.* On trees. Not common. Quarr Wood (Bloxam); on oak, Apes Down (F. Morey).

Lobaria pulmonaria, *Hoffm.* Not common. I. of W. (Dr. Holl); Appuldurcombe, Ryde (B.M.Cat.); Shanklin (Bloxam).

Ricasola laetevirens, *Leight.* I. of W. (Bloxam); Shanklin (Dr. Holl); Appuldurcombe (B.M.Cat.).

Peltigera spuria, *Leight.* On ground amongst grass. Near Ryde (B.M.Cat.); Shanklin Downs (Dr. Holl); Newbarn Down (H.M.L.).

P. canina, *Hoffm.* On rock, ground, trees, &c. Common. Landslip, Westover, St. George's Down (H.M.L.).

P. canina, *f. membranacea*, *Nyl.* On rock, Landslip (H.M.L.).

P. polydactyla, *Hoffm.* Mossy earth. Combley Wood (J.F.R.).

P. polydactyla, *var. hymenia*, *Nyl.* On ground. St. George's Down (H.M.L.).

P. rufescens, *Hoffm.* On mossy earth. Common. (Bloxam).

P. rufescens, *var. praetextata*, *Fries.* On rock, Landslip (H.M.L.); Apes Down (J.F.R.).

P. scutata, *Leight.* On mossy earth and trees. Shanklin (Salwey).

P. horizontalis, *L.* Among moss at base of tree, Apes Down (J.F.R.); Westover and Newbarn Down (H.M.L.).

Physcia flavicans, *D.C.* Trees, rocks, &c. I. of W. (Dr. Holl); Ventnor, Ryde, Shanklin (B.M.Cat.).

Ph. chrysophthalma, *D.C.* On trees. Near Ryde (B.M.Cat.).

Ph. parietina, *De Not.* On rocks, tiles, posts, &c. Very common. Appuldurcombe, Carisbrooke (H.M.L.).

Ph. parietina, *f. congranulata*, *Cromb.* Ryde (B.M.Cat.).

Ph. parietina, *f. cinerascens*, *Leight.* On rocks, trees, &c. Common. Appuldurcombe (H.M.L.).

Ph. parietina, *var. ectanea*, *Nyl.* Rocks. Niton (Reader); St. Catherines (H.M.L.).

Ph. ciliaris, *D.C.* Trees and rocks. Ryde (B.M.Cat.); Shorwell (Reader); I. of W. (Bloxam).

Ph. pulverulenta, *Nyl.* On trees. Ryde (B.M.Cat.).

Ph. pulverulenta, *f. argyphaea*, *Nyl.* I. of W. (B.M.Cat.).

Ph. pulverulenta, *f. diminuta*, *Cromb.* Shanklin, Appuldurcombe (B.M.Cat.).

Ph. pulverulenta, *var. angustata*, *Nyl.* On moss. Appuldurcombe (B.M.Cat.).

Ph. tenella, *Nyl.* On rocks, trees, gates, &c. Frequent. Arreton, Garstons, Carisbrooke (H.M.L.).

Ph. obscura, *Nyl.* On trees (Bloxam); on oak, Steephill (H.M.L.).

Ph. aquila, *Nyl.* On rocks, Old Park, Ventnor (Bloxam).

Ph. stellaris, *Nyl.* On trees. Shanklin (Salwey).

Ph. stellaris, *var. leptalea*, *Nyl.* On trees and stones. Brading (B.M.Cat.).

Ph. pityrea, *Nyl.* Trees and walls. Ryde, Appuldurcombe (B.M.Cat.).

Ph. aipolia, *Nyl.* Shanklin (B.M.Cat.).

Ph. aipolia, *var. anthelina*, *Cromb.* Ryde (B.M.Cat.).

Ph. aipolia, *var. cercidia*, *Nyl.* Ryde (B.M.Cat.).

Ph. tribaccoides, *Nyl.* On young trees. Near Ryde, the only British locality recorded (Rev. J. M. Crombie).

Ph. astroidea, *Nyl.* On trees. Ryde (B.M.Cat.).

Ph. ulothrix, *var. virella*, *Cromb.* On trees. Ryde (B.M.Cat.).

PLACODEI.

Pannaria rubiginosa, *Del.* On mossy rocks and trees. Appuldurcombe (Bloxam).

P. pezizoides, *Web.* On earth amongst moss and rocks, Bonchurch (Bloxam).

P. pezizoides, *var. coronata*, *Ach.* On moss-covered rocks, the Landslip (Bloxam).

Pannularia nigra, *Nyl.* On calcareous rocks. Shanklin (B.M.Cat.); on pieces of chalk, Brighstone Down (H.M.L.).

Coccocarpia plumbea, *Nyl.* On trees. Appuldurcombe (Bloxam).

Lecanora lentigera, *Ach.* I. of W. (B.M.Cat.).

L. saxicola, *Ach.* On trees and rocks. Ryde (B.M.Cat.).

L. fulgens, *Ach.* Freshwater Bay (Turner and Borrer).

L. sympagea, *Nyl.* Ryde (B.M.Cat.).

L. murorum, *Ach.* On rocks (Bloxam).

- L. teicholyta**, *Ach.* I. of W. (B.M.Cat.); Shanklin (Hyndman).
L. Lallavei, *Nyl.* On calcareous rocks. I. of W. (B.M.Cat.).
L. vitellina, *Ach.* Rocks (Bloxam).
L. citrina, *Ach.* Bonchurch and St. Lawrence (B.M.Cat.).
L. aurantiaca, *Nyl.* On trees, Appuldurcombe and Luccombe (Bloxam); St. Helens, Bembridge (B.M.Cat.); Gatcombe (Reader).
L. ferruginea, *Nyl.* On trees and rocks. I. of W. (B.M.Cat. and Salwey); Godshill Church (J.F.R.).
L. ferruginea, *var. festiva*, *Nyl.* On stone wall, Blackgang (H.M.L.).
L. atroflava, *Nyl.* Ryde (B.M.Cat.).
L. cerina, *Ach.* On trees. Shanklin (B.M.Cat.).
L. cerina, *f. cyanolepra*, *Nyl.* On smooth-barked trees. Shanklin (B.M.Cat.).
L. pyracea, *Nyl.* On trees and walls. Ryde (B.M.Cat.).
L. luteoalba, *Nyl.* On beech trees. Ventnor (B.M.Cat.); Shanklin (Salwey).
L. phlogina, *Nyl.* On trees. Ryde (B.M.Cat.).
L. phlogina, *var. lutea*, *Nyl.* Luccombe Cove (B.M.Cat.).
L. irrubata, *Nyl.* On rocks (Bloxam).
L. calva, *Nyl.* On calcareous rocks. I. of W. (B.M.Cat. and Bloxam).
L. sophodes, *Ach. f. metabolica*, *Ach.* On trees and stone walls. Shanklin (Dr. Holl).
L. exigua, *Nyl.* Shanklin (B.M.Cat.); Landguard (Salwey).
L. exigua, *f. demissa*, *Stiz.* Shanklin, Luccombe (B.M.Cat.).
L. dispersa, *Nyl.* On limestone rocks. Ryde beach (B.M.Cat.).
L. subfusca, *Nyl.* On trees, rocks, walls, &c. Common. The Undercliff, Newport, &c. (H.M.L.).
L. subfusca, *var. campestris*, *Nyl.* Shanklin (B.M.Cat.).
L. Parisiensis, *Nyl.* On trees. I. of W. (B.M.Cat.); Shanklin (Dr. Holl).
L. rugosa, *Nyl.* On trees. Carisbrooke, and on bark of beech, Godshill (J.F.R.).
L. atrynea, *Nyl.* On rocks and posts. Shanklin (B.M.Cat.).
L. angulosa, *Ach. var. chondrotypa*, *Stiz.* Bembridge (B.M. Cat.).
L. glaucoma, *Ach.* Rocks. I. of W. (Bloxam).
L. albella, *Pers.* On bark, Combley Wood (J.F.R.).
L. Hageni, *Ach.* On trees and old wood. Ryde (B.M.Cat.).
L. sulphurea, *Ach.* On rocks (Bloxam).
L. symmictera, *Nyl. var. aitema*, *Nyl.* On trees. Shanklin (B.M.Cat.).
L. metabolioides, *Nyl.* Shanklin (B.M.Cat.).
L. polytropia, *Ehrh.* On flints, Bowcombe Down (J.F.R.).
L. albariella, *Nyl.* On maritime chalky rocks. I. of W. (B.M.Cat.).

L. syringeae, *Ach.* Brading (B.M.Cat.).

L. syringeae, *f. metabolica*, *Nyl.* Brading (B.M.Cat.).

L. atra, *Ach.* I. of W. (H.M.L.).

L. Turneri, *Sm.* On trees. Carisbrooke, Bembridge (B.M.Cat.); on tree, Appuldurcombe (H.M.L.).

L. parella, *Ach.* Trees and rocks (Bloxam); on gravestones and beech tree, Godshill (J.F.R.); Hoy's monument, St. Catherine's Down (H.M.L.).

L. pallescens, *Nyl.* On rocks and trees. Shanklin (B.M.Cat.).

L. gibbosa, *Nyl.* On granitic and hard rocks. Ryde (B.M.Cat.); on flint, Westover Down (H.M.L.).

L. calcarea, *Somm.* On calcareous rocks. The Landslip (Bloxam).

L. pruinosa, *Nyl.* On mortar and limestone rocks. Shanklin (Dr. Holl).

Pertusaria multipuncta, *Nyl.* On trees. I. of W. (B.M.Cat.).

P. velata, *Nyl.* On trees and rocks. Quarr Wood (B.M.Cat.); Shanklin (Salwey).

P. communis, *D.C.* On trees. Common. Appuldurcombe (B.M.Cat.); I. of W. (Bloxam).

P. pustulata, *Ach.* On trees. Shanklin (Dr. Holl).

P. leioplaca, *Schaer.* On trees. Shanklin (B.M.Cat.); on bark, Marvel Copse (J.F.R.).

P. leioplaca, *f. hexaspora*, *Nyl.* Shanklin (B.M.Cat.).

P. amara, *Nyl.* On bark of trees. Frequent. Firestone Copse (J.F.R.); Appuldurcombe, Combley (H.M.L.).

P. coccodes, *Nyl.* Shanklin (Salwey).

P. incarnata, *Leight.* This lichen is very rare. It grows on flints, forming a zonal thallus closely appressed, with little circular cups containing the spores. A specimen was found by Mr. W. H. Wilkinson in Freshwater Bay, and with the exception of one record from the Irish coast this is the only place where it has been seen in the British Isles (H. N. Dixon, *Vic. Hist. Hants*).

P. globulifera, *Turn.* On bark, Parkhurst (J.F.R.).

P. fallax, *Pers.* On trees (Bloxam).

Phlyctis agelaea, *Koerb.* On trees. Carisbrooke (B.M.Cat.).

Ph. argena, *Ach.* On trees. On bark of beech, Godshill (J.F.R.).

Urceolaria scruposa, *Ach.* On rocks. Shanklin (B.M.Cat.); the Landslip (Bloxam).

Lecidea canescens, *Dicks.* On trees, walls, and rocks. Very common. Bembridge (J.F.R.); Ventnor (Reader); Appuldurcombe, Carisbrooke, &c. (H.M.L.).

Lecid. calcarea, *Weis.* On rocks, the Landslip (Bloxam).

Lecid. anomala, *Fries.* On ash and holly. Shanklin (Salwey).

Lecid. carneo-lutea, *Turn.* On elm and ash. Brading and St. Lawrence (E. M. Holmes); Ventnor (Dr. Holl).

Lecid. myriocarpa, *D.C.* On oak gate, Blackwater (H.M.L.).

Lecid. premnea, *Fr.* On old trees. Shanklin (Salwey).

Lecid. petraea, *Wulf.* On rocks. Frequent. On pebbles, St. Boniface Down (Reader); Freshwater Bay (W. H. Wilkinson); on stones, near Combley Wood (J.F.R.).

Lecid. confluens, *Webr.* On rocks. Common (J.F.R.).

Lecid. muscorum, *Sw.* Common. On bank near Carisbrooke; on moss on wall, Blackgang (H.M.L.); on moss, the Landslip (Bloxam).

Lecid. vernalis, *L.* On trees. I. of W. (Bloxam).

Lecid. erysiboides, *Nyl. f. sordidescens*, *Nyl.* On old trees. I. of W. (Crombie).

Lecid. parasema, *Ach.* On trees, rocks, &c. Common. On tree, Carisbrooke, and on the wall of the Castle; also on wall at Niton, &c. (H.M.L.).

Lecid. parasema, *sub-sp. elaeochroma*, *Ach.* On trees. Common (J.F.R.).

Lecid. platycarpa, *Fr.* On stones, Combley Wood (J.F.R.); Ventnor (Reader).

Lecid. caeruleonigricans, *Lightf.* On the earth among rocks. Ventnor (Dr. Holl).

Lecid. effusa, *Sw.* On trees. I. of W. (H.M.L.).

Lecid. effusa, *var. caesio-pruinosa*, *Mudd.* Niton (Reader).

Lecid. minuta, *Schaer.* On trees. I. of W. (Crombie).

Lecid. conglomerata, *Fr.* On trees. Shanklin (Salwey).

Lecid. neglecta, *Nyl.* On moss, Whitcombe (H.M.L.).

Lecid. lenticularis, *Ach. f. nigro-clavata*, *Nyl.* On trees. Shanklin (Dr. Holl).

Lecid. aromatica, *S.M.* On wall, Northwood Park (J.F.R.).

Lecid. tricolor, *With.* On various trees. I. of W. (Dr. Holl).

Lecid. fallax, *Hepp.* On elms. Near Shanklin (Dr. Holl).

Lecid. metaboloides, *Nyl.* I. of W. (B.M.Cat.).

Lecid. leucoclinella, *Nyl.* On rocks. Shanklin (Salwey).

Lecid. marginata, *Schaer.* On rocks. I. of W. (Dr. Holl).

Lecid. stellulata, *Tayl.* On rocks and stones. Ventnor (Dr. Holl).

Lecid. grossa, *Pers.* On trees. Shanklin (Dr. Holl).

Lithographa dendrographa, *Nyl.* On trees. Whitefield (E. M. Holmes).

Opegrapha varia, *Pers.* On trees and rocks. Frequent. On bark of elm, Newport, and on walls of Carisbrooke Castle (H.M.L.).

O. saxicola, *Ach.* On rocks. The Landslip (Bloxam).

O. saxicola, *var. Chevallieri*, *Leight.* Rocks, I. of W. (Vic. Hist. Hants).

O. saxicola, *f. gyrocarpa*, *Zw.* Shanklin (Dr. Holl).

O. atra, *Pers.* On trees. Common. On stones at Wootton, Brook, Cowes, &c. (J.F.R.).

Stigmatidium crassum, *Dub.* On trees. I. of W. (Bloxam).

S. venosum, *Ach.* On old trees. Quarr Wood (Bloxam).

Arthonia cinnabarina, *Wallr.* On old trees. America Woods (Salwey); Bonchurch (Reader).

A. spadicea, *Leight.* On hazel stump, Marvel Copse (J.F.R.).

Graphis dendritica, *Ach.* On trees, Appuldurcombe (Bloxam).

G. inusta, *Ach.* On trees: oak, hazel, thorn, beech, sycamore. Bonchurch (Reader).

G. scripta, *Ach.* On young oak, Parkhurst (J.F.R.).

G. elegans, *Sm.* On young oak, Parkhurst (J.F.R.).

PYRENODEI.

Normandina pulchella, *Borr.* On mossy trees. Appuldurcombe (Bloxam).

Yerrucaria margacea, *var. aethiobola*, *Whlmb.* On wet rocks. I. of W. (Salwey).

Y. mauroides, *Schaer.* On flints, Bowcombe and Sullens Copse (J.F.R.).

Y. nigrescens, *Pers.* I. of W. (Salwey); on stone, Westover Down (H.M.L.).

Y. polysticta, *Borr.* On walls, &c. I. of W. (Salwey).

Y. viridula, *Schrad.* On old walls, rocks, &c. Shanklin Church (Salwey).

Y. murina, *Leight.* On calcareous rocks. Shanklin (Salwey).

Y. rupestris, *Schrad.* On stones near Sullens Copse (J.F.R.).

Y. integra, *Nyl.* On sandstone. Shanklin (Dr. Holl); on chalk, Brighstone Down (H.M.L.).

Y. calciseda, *D.C.* On flints, Bowcombe (J.F.R.).

Y. gemmata, *Ach.* On trees. Common.

Y. biformis, *Borr.* On trees: ash, gorse, elm, oak, willow. Shanklin (Salwey).

Y. Salweii, *Leight.* On calcareous rocks, mortar, &c. Shanklin Church and Sandown (Salwey).

Y. chlorotica, *Ach. var. codonoidea*, *Leight.* On rocks. I. of W. (Salwey).

Y. nitida, *Weig.* On trees. Common. Bonchurch (Reader).

In the foregoing list the term "I. of W.", which precedes the names of several of the authorities quoted, signifies that with the particular species in question no more precise locality was given than the Island as a whole.

HEPATICS.

By W. INGHAM, B.A., Hon. Sec. Moss Exchange Club.

THE Hepaticae (Liverworts or Scale Mosses) are cryptogams, or, as they are sometimes called, "Flowerless Plants," because the organs which answer the purposes of flowers are, in their case, either concealed in the substance of the plant, or, if exposed, are not obvious to the unaided eye.

The Hepatics rank in the Vegetable Kingdom next below the Mosses, and are distinct from them in many points, some of which are given below. Of the 262 species recorded by Lett for the British Isles, 37 only have, up to the present, been found in the Isle of Wight.

These beautiful little plants are of great interest to botanists, and in many cases have been the subject of their favourite study. They may be readily distinguished from the mosses by the brittle character of their tissue, and by the capsule (usually round and black, resembling the black head of a pin) generally dividing into four valves to scatter the spores. The seta, too, which supports the capsule, is much weaker than in the mosses, and is generally whitish or silvery.

Mixed with the spores in the capsule are the so-called *elaters*, resembling minute, golden springs or corkscrews, which by their energetic recoil aid in scattering the spores.

The Hepatics may be divided into two natural classes. The first class includes those plants which are without distinct stem and leaves, both these being fused into a flat leaf-like body, which may be termed a *frond* or *thallus*. This class links the Hepatics to the Lichens. The other class includes plants with a distinct stem bearing leaves, which are always attached to the stem, and never have nerves like mosses. This class most resembles the true mosses, and contains some of the most beautiful and interesting plants known.

The favourite home of these plants is where there is abundance of moisture and shade, and where the air is pure. They luxuriate near waterfalls, at the sources of rivers, and in romantic dells. The Isle

of Wight can scarcely be regarded as an ideal locality for them. The following table gives some of the most evident differences between Hepatics and Mosses.

HEPATICS.

1. Protonema generally a *short-lived, inconspicuous, flattened expansion.*
2. Adult shoot generally *dorsio-ventral, thalloid* in many forms.
3. *Unicellular root-hairs.*
4. *No trace of vascular tissue.*
5. Leaves (when present) *destitute of mid-rib.*
6. Capsule *remains* within the calyptra *until the spores are ripe.*
7. Ruptured calyptra remains as a *vaginula, no portion being raised as a cap on the capsule.*
8. Elongation of seta (when present) is *sudden.*
9. Growth of capsule is *not effected* by a two-sided apical cell.
10. The spore-part fills up *the whole* capsule.
11. In all cases (except *Riccia*), some of the spore cells are sterile (being frequently developed into *elaters*).
12. *No columella* (except in *Anthoceros*).
13. *No stomata* on capsule (except *Anthoceros*).

MOSSSES.

1. Protonema frequently *persistent, well-developed, generally thread-like.*
2. Adult shoot *radial or isobilateral*, always differentiated into *stem and leaf.*
3. *No root-hairs*, but branched *multicellular rhizoids.*
4. Stem frequently with a central strand of *rudimentary vascular tissue.*
5. Leaves *generally with a mid-rib.*
6. Capsule *escapes* from the calyptra *at an early stage.*
7. Portion of calyptra (with certain exceptions) *is carried up on the capsule.*
8. Elongation of seta is *gradual.*
9. Growth of capsule (except *Sphagna*) *is effected* by a two-sided apical cell.
10. The spore part forms *only a layer* of cells in the capsule.
11. All the spore cells become *spores.*
12. *A well-developed columella* in capsule.
13. Capsule generally *with stomata.*

Many Hepatics have what are called *conduplicate* leaves. In these cases the leaf is folded, one part lying against the other. Sometimes the two parts are equal or nearly equal to each other, as in the genus *Scapania*. In other cases, as in the genus *Frullania*,

one of the parts or lobules is very much smaller than the other, and often of a peculiar shape. In the two species quite common in the Island, viz., *Frullania dilatata* and *Frullania Tamarisci*, the small lobe, instead of being flat like the large lobe, is in the form of a pouch (larger in the former than in the latter *Frullania*). The rain in trickling down fills these little pouches or pitchers, and is retained in them when other parts of the plant are dry. Tiny *rotifers* inhabit the pitchers and live on the minute dust brought in by the rain-water. In return for their shelter in the pitchers, as it were, the rotifers supply the plant with nitrogen, which they obtain from the minute organisms washed in by the rain. Thus the *Frullania* and the *rotifer* mutually help each other, the former supplying oxygen to the rotifers, and the latter supplying carbonic acid and nitrogen to the plant.

COLLECTION AND PRESERVATION OF HEPATICS.—When gathered, each separate tuft should be wrapped in a piece of paper, with a note on the kind of place where it was growing. The plants thus wrapped up and put in the vasculum or bag will last several weeks without any ill-effects, so the collecting can go on throughout a long holiday.

On reaching home, the papers should be unwrapped and the plants washed in water to get rid of sand, clay, &c. They may then be exposed on papers in a *shady* place and allowed to dry. No pressure is necessary to preserve them, although some are rendered more beautiful to the eye by a very slight pressure. When thoroughly dry they may be placed in packets labelled with name of place, kind of habitat, and time of gathering. In this dry state they will remain an indefinite time, as far as we know, without any decay setting in—certainly for over 100 years. At any time they may be placed in water and they will open out and look as they did when gathered in the damp state. They may then be placed in a shady place to dry again, and this drying and wetting may be repeated an indefinite number of times.

The thalloid or frondose Hepatics are much slower in recovering after being dried than the foliose species. Sometimes several hours' soaking in water is necessary to see a frondose Hepatic as it was when gathered in a damp place.

BOOKS ON HEPATICS.—Lett, "Hepatics of the British Islands," 1902, 7/6 net: to be obtained from the Author, the Rev. H. W. Lett, M.A., Aghaderg, Co. Down, Ireland. Pearson's standard work, "The Hepaticae of the Brit. Isles," 2 vols., with 228 coloured plates, pub. at £11 2s 6d., but obtainable second-hand for five or six guineas. Cooke's "Hepatics," pub. at 6/-, is useful for its woodcuts, but is rather out of date. "A Key to Hepatics of the Brit. Islands," by S. M. Macvicar, 9d.; and "Catalogue of British Hepatics," by H. W. Lett, M.A., 6d.: both to be obtained from V. T. Sumfield, Eastbourne. The "Census Catalogue of British Hepatics," to be obtained from W. Ingham, York, 10d. post free. Also T. H. Russell's "Mosses and Liverworts," 4/6.

The following species were found by the Rev. H. M. Livens and others, and named by Mr. W. Ingham, B.A.

I. THALLOID OR FRONDOSE HEPATICS (Without stem or leaves).

Reboulia hemisphaerica, *Raddi*. Shady places on ground and rocks, especially on limestone. Not common. Ashey Down.

Conocephalus conicus, *Dum*. Damp shady places. Abundant in favourable localities. Blackwater, Gatcombe, Shanklin Chine.

Lunularia cruciata, *Dum*. Damp shady banks, paths, &c. Common. The Landslip, Newport, Chillerton, Westover, &c.

Aneura pinguis, *Dum*. On moist rocks and clay. Rare. The Landslip, Priory Bay.

A. multifida, *Dum*. On sides of ditches. Not common. The Wilderness.

A. sinuata, *Limpr*. Not common. On bank of ditch, Blackwater; and in bog below Ladder Chine, Chale.

A. latifrons, *Lindb*. On turfey banks. Rare. Ashey Down, Priory Bay.

Metzgeria furcata, *Lindb*. On trees. Very common. Apes Down Wood, Parkhurst, &c.

M. pubescens, *Raddi*. Shaded rocks. Rare. The Landslip.

Pellia epiphylla, *Dum*. On moist clay banks and wet rocks. Common. Shanklin Chine, Brighstone Chine, Whale Chine, Steep-hill, Blackwater, Chillerton, Blackgang, &c.

P. calycina, *Tayl*. Not uncommon. On wet shady bank, Marvel, and at Shanklin Chine.

Blasia pusilla, *L*. On wet sand of cliffs. Rare. Shanklin.

Fossombronia, sp. (barren). In wet peaty ground on bank of ditch in the Wilderness.

II. FOLIOSE HEPATICS (provided with stem and leaves).

Lophozia turbinata, *Steph*. On damp shady ground. Rather common. The Landslip, Ashey Down, Shanklin, Garstons Down, Tolt Copse.

Plagiochila asplenioides, *Dum*. On moist ground in woods. Fairly frequent. The Landslip, Carisbrooke, Shanklin Chine.

P. asplenioides, var. **major**, *Nees*. About stump in damp copse. Rare. Westridge Plantation.

P. asplenioides, var. **Dillenii**, *Tayl*. On moist rock. Locally abundant. The Landslip, Appuldurcombe.

Lepidozia setacea, *Web*. In sandy hollows. Very rare. Ventnor Down (Rev. H. P. Reader). The usual habitat is in mountain bogs.

Lophocolea bidentata, *Dum*. Shady places on ground, base of trees, rocks. Common. Apes Down, Parkhurst, Wootton, &c.

L. cuspidata, *Limpr.* Damp mossy banks. Frequent. Appuldurcombe, the Landslip, Parkhurst, Combley Wood, Hampstead, Borthwood, Whale Chine, &c.

L. alata, *Mitt.* On shady rock. Rare. The Landslip, Parkhurst Forest.

L. heterophylla, *Dum.* On damp banks and rotten stumps. Frequent. The Wilderness, Carisbrooke, Westover, Shanklin Chine, &c.

Cephalozia bicuspidata, *Dum.* On damp shady ground and rotten wood. Not common. Blackwater, Whale Chine, Apse.

Cephaloziella byssacea, *Warnst.* Uncommon. Bleak Down; St. George's Down (F. Morey).

Kantia Trichomanis, *Gray.* On damp ground amongst mosses. Uncommon. Parkhurst.

K. Sprengelii, *Pears.* Damp ground in copses, &c. Rather common. Parkhurst, Whale Chine, the Wilderness; St. George's Down (F. Morey).

K. arguta, *Lindb.* On damp peaty ground. Not common. Parkhurst.

Diplophyllum albicans, *Dum.* Banks, rather dry and shady. Not common. Parkhurst and Westover.

Scapania compacta, *Roth.* On rocks and boulders; also on heaths and dry exposed ground. Not common. On the broken cliff at Headon Hill; I. of W. (Pearson).

Radula complanata, *L.* On ash trees at Newbarn Down and Hampstead.

Madotheca laevigata, *Schrad.* On rocks. The Landslip and Luccombe Chine (Rev. A. Bloxam, 1864).

M. platyphylla, *Dum.* On trees, mossy banks and rocks. Frequent. Carisbrooke.

Frullania Tamarisci, *L.* On bark of trees, rocks and ground. Westover; abundant amongst the heather on Headon Hill.

F. dilatata, *Dum.* On trees, rarely on rocks. Common and abundant. Combley, Westover Plantation, Hampstead, &c.

Jungermania ventricosa, *Dicks.* Amongst moss in bog. The Wilderness.

J. exsecta, *Schmid.* Rare. In sandy hollow on the downs, Ventnor (Rev. H. P. Reader).

Aplozia crenulata, *Sm.* In boggy places. Locally abundant, absent elsewhere. The Undercliff at Blackgang, Whale Chine, and bog below Ladder Chine.

MOSSES.

By the REV. H. M. LIVENS.

THERE are few orders of plants, if any, which contribute more to the beauty of nature and to the joy of man than the Mosses. After other plants have bloomed and cast their seeds the Mosses exhibit their greatest vigour and beauty of fruition; while species may be found at all times of the year holding aloft their small finely-wrought urns or capsules charged with the spores which are the promise of the next generation. In all kinds of places, as at all times and seasons, they are the companions of our way, on rock and wall, on bank and path and tree. They are before us on the tops of the mountains, in reeking swamps, in every copse and forest, and on the wind-blown moors; and, in general, it may be relied on that where the Moss grows green there the air is pure and sweet.

Moss in the form of peat gives the glimmer of warmth to the poor Irish cabin. Moss is the abomination of the conventional gardener who prefers paths of dead red gravel to paths of living green velvet. And when at length man in his weariness has gone to his rest, the Moss creeps unperceived to the sacred spot and writes his name in letters of living emerald upon the stone.

The Mosses are spread widely over the face of the earth. One, not unfamiliar on the bark of trees in our English woods, *Ulota phyllantha*, has been found growing at the utmost limit of plant life on the shoulders of Chimborazo. Another, the familiar little Silver Moss (*Bryum argenteum*) which lends its metallic lustre to our ash-paths, was one of the five discovered by Sir Joseph Hooker at the furthest boundary of Antarctic vegetation on Cockburn Island. No less than one-fifth of the Mosses of New Zealand are also found in Europe. This, together with the preceding facts, is proof of the vast distance to which, like the dust of Krakatoa, the minute volatile spores of the Mosses may be carried by the wind.

Mosses are not only widely distributed over the surface of the earth, but also date from a great antiquity. To this both peat-bogs and coal-fields testify. Fossilized remains of Mosses have been

found in Pleistocene strata at Crofthead in Renfrewshire, where an inter-glacial deposit contained eleven species, which are still extant. Fourteen more species have been discovered in a deposit in the valley of the Clyde. Carboniferous strata in France have also yielded traces of Moss.

The British species and named varieties number between 800 and 900. Of these, some 215 have, up to the present, been found in the Isle of Wight.

DISTRIBUTION IN THE ISLAND.—Moss is peculiarly sensitive to variations of soil and rock, of aspect and atmosphere. The greatest variety is found in mountainous districts where, like the lichens, these hardy cryptogams are not repelled by situations which are too bleak for the flowering plants. The absence from the Isle of Wight of the older and loftier rock formations thus deprives it entirely of certain orders which, like the *Andreaceae*, grow only on rocks at a fairly high altitude.

Geologically, the Isle of Wight is made up of Secondary and Tertiary deposits with characteristic Moss flora. The distribution therefore falls into the following natural divisions :—

- 1.—The Mosses of the sands and clays of the northern part of the Island and of the central valley.
- 2.—The Mosses of the Chalk Downs.
- 3.—The rupestral Mosses of the Greensand and associated strata of the Undercliff and the Landslip.
- 4.—The Mosses peculiar to the marshy districts, especially the Wilderness, the only genuine bog in the Island.
- 5.—The arboreal Mosses found on and among the trees of Parkhurst Forest, Appuldurcombe, Combley and other woods.

LIFE HISTORY.—The life of a Moss may be said to begin with the germination of a spore.* This, under proper conditions of warmth and moisture, throws out a green thread which grows rapidly by cell-division and branches freely. It is called the *protonema* and corresponds to the *mycelium* or "spawn" of a mushroom. This thread-like protonema being supplied with the elements for the creation of chlorophyll granules is vegetative; in other words, it is able to supply itself with nutriment from the carbonic dioxide in the air, while at the same time it absorbs moisture from the surface of the ground, tree, or rock on which it is growing. It is a familiar object on old flower-pots. Here and there in the texture of this delicate fibrous mat cells are formed by angular instead of by vertical division. Whenever this occurs a bud begins to form, from which there presently develops a rosette of very small leaves. These are

* In the case of the Cryptogams the term "spore" is used in place of "seed," there being a noteworthy difference of structure. A *spore* is a simple body consisting of but a single cell, while a *seed* is multicellular and of more elaborate construction. Flowering plants are reproduced by means of seeds.

in turn succeeded by larger leaves, enclosing in their midst certain organs destined to play important parts in the reproduction of the plant. It is at this early stage that a sexual divergence takes place; certain plants, or it may be different parts of the same plant, producing the *antheridia* or male organs, while others produce the *archegonia* or female organs. The antheridia usually appear in the axil of a branch, or at the extremity of branch or stem, in the form of a cluster of elongated sacs, interspersed among which are a number of reddish, translucent processes which, when seen under the microscope, remind one strongly of the turned and stained legs of a table. These are the *paraphyses*, and their function is probably to assist in the development of the antheridia by ensuring them a regular supply of moisture. As the antheridia ripen, their cellular substance breaks up into a number of globular bodies known as *mother-cells*, each one of which contains a single cell of curiously serpentine form. The minute body is at first coiled up within its protective envelope like an embryo snake in the egg; but as soon as an antheridium is ripe it bursts, through the absorption of water, discharges its contents which consist of a host of mother-cells which in their turn are ruptured, thus allowing the highly active *antherozoids* to escape. This sequence of events can only occur when the parts are amply supplied with moisture, and a film at least of water is absolutely necessary to provide a medium in which the antherozoids can exercise their mobility. Wriggling through the waters of a microscopic sea by the aid of their cloven tails, some of them have the good fortune to make their way into the neighbourhood of the *archegonia*, which we must now briefly describe.

The *archegonia*, or female organs of reproduction, are borne, like the antheridia, on different parts of the plant; sometimes in the same bud as the antheridia, sometimes in a different bud, or on a different plant.

They are minute flask-like bodies with an enlarged base and a long neck. The base contains the ovule which awaits fertilization by the antherozoids. The latter we have traced from the organs that produced them. A few of them, let us assume, have, assisted by their own movements, reached the mouth of an archegonium. The presence of sugar has been detected in the mucous column in the neck of the archegonium, and this seems to act as an attraction to the free antherozoid, which, guided thus to its proper haven, enters the tube and makes its way down to the ovule with which it becomes blended and thus fertilization is effected.

Rapid and extensive changes now take place in the ovule, which, together with its envelope, increases to a considerable size, where its contents become much elaborated. During this time also its short pedestal is lengthening into a tall stalk or *seta*, which thus carries aloft the capsule of fertilized spore-cells. Covering the capsule is the ruptured envelope of the ovule, which remains as long as it is required as a protective hood or *calyptra*, which is either of

a silky or membranous texture. When mature the capsule consists of the following parts:—

The outer integument which may possess *stomata*, or breathing-pores, about its base. The stomata remain active as long as the capsule is green, but their function ceases as it ripens to a yellow, tawny, brown, or crimson colour. Within is a layer of loose cellular tissue with ample air-spaces (*lacunae*) surrounding the spore-sac, the contents of which, consisting of a compact green mass attached to the *columella*, or central support, divides up as the fruit ripens into a large number of free spores, for the distribution of which a most delicate machinery is called into play. First of all, the calyptra, now dry and loose, is blown away by the wind or brushed off by a passing foot. Its removal discloses the top of the capsule, which is seen to be provided with a symmetrical lid or *operculum*. This lid is held in its place by a band of cells attached to its rim, called the *annulus*, which, when the fruit is ripe, bursts by contraction and liberates the lid which falls off. In some Mosses, *e.g.*, the *Sphagnaceae*, the spores are now exposed to wind and weather in the open capsule and will readily get blown or shaken out. In most cases, however, the rim of the cup is seen to be ornamented with a golden or crimson fringe of finely-shaped teeth. Frequently the fringe is double, as in the case of many species of *Bryum*, the processes of the inner circle being the more fragile. With the exception of *Tetraphis*, in which the teeth are only four in number, they are always found in multiples of 8, namely, 16, 32, or 64. This beautiful structure is called the *peristome*.

The teeth are hygroscopic: in other words, in the presence of moisture they close inwards, their tips meeting in the centre and forming an effective roof over the casket of spores; but if the atmosphere is dry, and therefore conducive to the scattering of the spores, the teeth open outwards in the style of a corona and there is no further impediment to their dissemination.

Owing to the striking variety exhibited by the peristomes of different species of Moss, the description just given, while offered as typical, is subject to many specific modifications. Thus, while some Mosses have a double peristome, with teeth long enough to meet in the centre, in other cases the teeth are short, and the measure of protection which they can offer to the spores is that rather of a fence or hedge than of a roof.

In the *Polytrichums* the teeth are extremely small, and curve over on to the surface of a tympanum or membrane to the edge of which their tips are attached. The membrane is stretched across the mouth of the capsule, the spores escaping through the narrow apertures caused when it is lifted by the erection of the teeth.

Some Mosses again have no lid, the top of the capsule breaking off irregularly. In the case of the *Andreaeaceae*, as before mentioned, an order of mountain Mosses not represented in the Isle of Wight, there is no lid, but the capsule splits down the sides in four equal

quarters, the segments remaining attached at the top and bottom. Should the atmosphere happen to be moist the edges of the segments are drawn close together so as to enclose the spores. As soon as the air is dry again the sides bulge out, and the wind blowing through the four clefts disperses the spores.

Moss has, however, other means of propagation beside that which has just been described, and which may be regarded as the normal method. Some, for instance, throw out from the leaf-tips or from the stem secondary protonema from which spring fresh plants as in the case of the primary protonema proceeding from the germinating spores.

There is also the method adopted by certain species that are shy of fruiting, namely by *gemmae*, small vegetative bodies borne in a cluster on the head of a column as in *Aulacomnium androgynum*; or in a pretty leafy cup, as in *Tetraphis pellucida*; or on the surface of the leaves, as in *Orthotrichum Lyellii*, in which case they protrude in great numbers from the leaf in the form of minute brown staves. *Bryum erythrocarpum* bears numerous globular crimson gemmae at the base of the stem.

The gemmae when mature fall to the ground, to which they attach themselves by means of root-hairs. A new plant then starts growing.

The following methods of propagation *without protonema* have been enumerated: By leaf-buds on rhizoids; leaf-buds on aerial rhizoids or hair-like appendages from the stem; bulbs on stem; young plants at the ends of the branches; leafy branches becoming detached; rooting of the main axis; single leaves breaking off from the plant, which when blown away by the wind will start growing, as in the case of *Campylopus pyriformis*.

These various methods of reproduction serve to show how well the preservation of the race of Mosses is ensured, and their wide distribution over the earth accounted for.

For further information the following books are recommended: Bagnall, "Handbook of Mosses" (for beginners), 1/. Dixon and Jameson, "The Student's Handbook of British Mosses," 18/6. Dixon, "Handbook Catalogue of British Mosses," 6d. (Sumfield, Eastbourne). The "Census Catalogue of British Mosses," 1/6 and 2/-, of the Editor, W. Ingham, B.A., 52 Haxby Road, York. Braithwaite, "British Moss Flora": the standard work, with numerous illustrations; may be purchased in unbound numbers at about 35/-, bound copies being proportionately more expensive. Wilson's "Bryologia Britannica," with its fine plates, though somewhat out of date, will always be invaluable; second-hand copies may be bought at from £2 to £3. Just published, is T. H. Russell's "Mosses and Liverworts," 4/6, being a popular introduction to their study, with excellent illustrations.

For hints as to preserving Mosses, see the section on Hepatics, by Mr. W. Ingham.

In the following list of species found in the Isle of Wight, wherever the name of a collector is not stated that of the writer of this article is to be understood. The nomenclature throughout is Dixon and Jameson's.

The services of Mr. W. Ingham in naming specimens and revising the complete list are cordially acknowledged. The late Prof. Barker also gave ready assistance until his health broke down.

Sphagnum cymbifolium. Bogs, sides of streams and pools. Abundant in the Wilderness, Rookley.

S. subsecundum, var. contortum. Boggy ground. Rare. Apse, and the marshes at Newchurch.

S. subsecundum, var. turgidum. Has been found only in the Newchurch marshes.

S. squarrosum. Bogs. Abundant in the Wilderness.

S. squarrosum, var. imbricatum. Has been found only in a ditch in the Newchurch marshes.

S. acutifolium. Bogs. Very rare in the Island. The Wilderness (Venables, 1860).

S. fimbriatum. Bogs. Local. The Wilderness (Miss F. M. Minns and H.M.L.).

S. intermedium. Bogs. Local. The Wilderness.

Sphagnum is happy in possessing the well-established English name *Peat Moss*, which embraces all its species. It is also known as *Bog-moss*.

Catharinea undulata. Fruit, late autumn and winter. On clay or sand, in woods, on shady banks, &c. Very common. Carisbrooke, Combley Woods, Shanklin Chine, Apes Down, Borthwood, the Landslip, &c.

C. undulata, var. minor. Fr. late autumn and winter. On sandy soil and on clay. Rare. Combley Woods (F. Morey).

Polytrichum nanum. Fr. variable, usually winter and spring. On sand and on clayey soil. Not common in the I. of W. Hampstead and Alverstene.

P. aloides. Fr. usually winter and spring. On sandy soil. Fairly common. Parkhurst, Arreton, Shanklin Chine, Brighstone Down.

P. piliferum. Fr. summer. On dry heaths and downs. Common. St. George's Down, Idlecombe, Luccombe and Shanklin Downs, Headon Hill.

P. juniperinum. Fr. summer. Heaths. Common. Brighstone Down.

P. gracile. Fr. summer. Peaty woods and dry heaths. Not common. Marvel Copse.

P. formosum. Fr. summer. Dry woods. Common. Parkhurst Forest.

P. commune. Bogs. Locally abundant. The Wilderness.

The *Polytrichums* are popularly known as "Urn Mosses" from their large capsules. *P. commune* is sometimes called Great Golden Maiden-hair Moss on account of the long golden seta. It is "one of the most highly developed and perhaps the finest of our mosses" (Dixon). In Lapland it is used for pillows and beds by the inhabitants, and also, it is said, by the bears.

Pleuridium axillare. Fr. winter. Boggy bank of ditch. Not common. The Wilderness.

Pl. subulatum. Fr. April to June. On clayey soil. Not common. Parkhurst and Appuldurcombe.

Ditrichum flexicaule. Fr. summer, very rare. In turf on downs. Abundant. Ashey and Westover Downs.

D. flexicaule, var. densum. On grassy downs. Not common. The downs above the Needles (Rev. H. P. Reader).

Seligeria calcarea. Fruits in winter very freely. Chalk cliffs and pits. Abundant locally. Newport. This moss, though minute in size, grows in such multitudes on the face of the chalk in the Mount Joy quarry, Newport, as to impart to it a distinct greenish-grey tone.

S. recurvata. Fr. winter. Sandstone rocks in shady places. I. of W. (Moss Census Cat., 1907).

Ceratodon purpureus (Purple Fork-moss). Fr. spring and early summer. Sandy and peaty soil in woods, &c. Common. Brighstone Down, Parkhurst, St. Catherine's Down, &c. The peristome repays examination under the microscope; the teeth resembling bamboos, or, as others think, goats' horns—whence the name, which means "horn-tooth."

C. purpureus, var. brevifolius. Peaty soil. St. George's Down.

Dichodontium pellucidum. Fr. autumn to spring. Wet rocks or sand near streams. Rare. I. of W. (Moss Census Cat.).

Dicranella heteromalla. Fr. winter. Banks in woods, roadsides, &c. Common and abundant. Parkhurst, Combley Wood, America Woods, Marvel Copse, &c.

D. heteromalla, var. interrupta. On sandy cliff. Rare. Sandown.

D. cerviculata. Fr. summer, rarely winter. Usual habitat, peaty banks and sides of ditches. Not common in the Island. On rotten vegetable matter in the Wilderness.

D. secunda. Fr. late summer. Stony ground on hillside. Rare. Staplers, Newport; I. of W. (Moss Census Cat.).

D. varia. Fr. autumn and winter. Damp clay fields, woods, and cliffs. Fairly common. Shanklin, Garstons, Mt. Joy chalk-pit, Blackwater, Headon Hill.

D. varia, var. tenuifolia. Habitat same as the type. Rare. I. of W. (Moss Census Cat.).

D. varia, var. callistoma. Rare. In chalk-pit, Newport.

Dicranoweisia cirrata. Fr. winter. On trees, fences, and thatch. Common and abundant. Godshill, Blackwater, Ningwood, &c. This moss is a noteworthy feature on some of the old thatched cottages in the Island.

Campylopus flexuosus (Rusty Swan-neck Moss). Fr. winter and spring. On high peaty soil. Not common. Headon Hill.

C. pyriformis. Fr. spring and summer. On heaths and peaty ground. Not common. St. George's Down, Parkhurst, Headon Hill. Propagated from leaves broken off and scattered by the wind.

C. fragilis. Fr. rare, spring. On sandy and peaty ground. Uncommon in the Island. Near the Longstone, Mottistone Down.

Dicranum Bonjeani. Fr. rare, late summer. In marshes and on heaths. Common. The Wilderness, Brighstone Down.

D. scoparium (Broom Fork-moss). Fr. late summer. Woods, heaths, &c. Common. Parkhurst, Garstons Down, Westover, Shanklin and Luccombe Downs, &c.

D. scoparium, var. orthophyllum. On heaths. Not common. Hampstead, Headon Hill.

Dicranum, Eng. name: Fork-moss.

Leucobryum glaucum (White-leaved Fork-moss). Fruit rare, winter, but persistent throughout the year, though not known in the Island. Heaths and woods on peaty ground. Not common in the Isle of Wight. Headon Hill.

Fissidens exilis. Fr. winter. Woods and shady banks. Rare. Apse Heath, Hampstead.

F. viridulus. Fr. winter. Clay banks and shady rocks. Not common. Combly Wood.

F. viridulus, var. Lylei. Rare. On calcareous clay bank, Apes Down.

F. incurvus. Fr. winter. Clay banks. Fairly common. Down-end, the Landslip, Hampstead, Bowcombe Down.

F. incurvus, var. tamarindifolius. Habitat the same as the type. Rare. The Landslip.

F. bryoides. Fr. winter. Clay banks, woods, &c. Common. Newport, Yarmouth, the Landslip, Arreton, Carisbrooke, &c. This small moss is very abundant; the bright red peristome of its capsules may often be detected in the winter. They are a fine object for the microscope.

F. adiantoides. Fr. winter. Amongst moss and on heavy soil. Rare. Asheys Down, Hampstead.

F. decipiens. Fr. winter and spring. Amongst grass of downs and on wet rocks. Not common. The Landslip.

F. taxifolius. Fr. winter. Clay banks, roadsides, &c. Very

common. Haven Street, Yarmouth, Shanklin Chine, Hampstead, America Woods, Newport, &c.

Fissidens, Eng. name: Flat Fork-moss.

Grimmia apocarpa. Fr. spring and summer. Rocks and walls. Not common. Blackgang, Combley Farm. The deep red teeth of the peristome spreading outwards as a crown when dry are a handsome feature.

G. pulvinata. Fr. spring. Walls and rocks. Common. Blackgang, Carisbrooke, Shalfleet, &c. The long hyaline points of the leaves give to this moss, which grows in neat cushions on the wall-tops and elsewhere, its fine hoary appearance. Until the fruit is ripe, when the seta becomes erect, the capsule is inverted and hidden, as for protection, among the leaves.

Phascum cuspidatum. Fr. early spring. On clay banks, fields, and waste places. Not common in the Island. Hampstead; Mt. Joy chalk-pit, Newport.

Ph. Floorkeanum. Fr. winter. Clay and chalk fields. Uncommon. On chalk pebbles, Culver Cliff (Rev. H. P. Reader).

Phascum, Eng. name: Earth-moss.

Pottia recta. Fr. winter. Bare places and fallow fields, chalk and clay. Not common. Garstons.

P. truncatula (Common Pottia). Fr. autumn and winter. Banks, fallow fields, especially clay. Common. Parkhurst, Wootton, near Whitecombe, &c.

P. intermedia. Fr. winter. Walls, fallow fields, &c. Not common.

P. intermedia, *var. littoralis*. Sandy hollow. Very rare. Brighstone Down.

P. minutula (Dwarf Pottia). Fr. winter. On clay cliffs and fallow ground. Not common. Shanklin Down, Luccombe Chine, Bowcombe Down.

P. Starkeana. Fr. winter and early spring. Fallow fields and bare ground. Rare. The Undercliff, Garstons Down.

P. lanceolata. Fr. spring. Dry banks, wall-tops, &c. Not common. The Landslip.

The *Pottias* and *Phascums* are amongst the smallest of our mosses.

Tortula rigida. Fr. winter. Usually on mud-caps of walls. Very rare. On banks (Bloxam). The dark, reddish-brown leaves are a distinct characteristic of this and the two following species.

T. ambigua. Fr. winter. Banks of calcareous clay, and mud-capped walls. Not common. Ashey; and at the foot of Garstons Down.

T. aloides. Fr. winter. On calcareous clay. Frequent. The Landslip; the cliff, Headon Hill; the Undercliff.

T. marginata. Fr. spring, but not confined to one season. Brick walls and sandstone rock. Common. Carisbrooke, Steephill.

T. muralis (Wall Screw-moss). Fr. spring. Walls, stones, paths, &c. Very common in all parts.

T. subulata. Fr. summer. Sandy banks. Fairly common. Whale Chine, the Landslip, Carisbrooke, &c. This moss has very long, light-brown capsules, and the teeth, which are pink, are united into a tube for more than half their length.

T. laevipila. Fr. summer. Trunks of trees, especially elm and oak. Common. The Undercliff, Parkhurst, Appuldurcombe.

T. intermedia. Fr. early summer. On roof-tiles and calcareous rocks and soil. Frequent. On the cliff at Headon Hill, and on roof-tiles at Gunville, Gatcombe, Freshwater, and Shalfleet.

T. ruralis (Great Hairy Screw-moss). Fr. early summer. On thatched and tiled roofs and on walls. Frequent and abundant. Growing in large, thick patches on roof of shed at Arretton Manor; on tiles of old farm-house (since pulled down), Freshwater; and on sandflat, Hampstead.

T. ruraliformis. Fr. early summer. In sand on the coast. Rare. I. of W. (Moss Census Cat.).

Barbula lurida. Fr. very rare, winter. On rocks and stumps. Rather common. The Landslip, Newbridge, Whale Chine, Westover.

B. lurida, forma obtusifolia (Ingham). This moss, new to the British Flora, has only once been found in the Island, at the Landslip, on clayey soil.

B. rubella. Fr. autumn. Rocks, walls, and banks. Rare. Cridmore.

B. tophacea. Fr. winter. On wet calcareous clay, walls, &c. Common. Shanklin, Alverstone, Headon Hill, Whale Chine, Luccombe Chine.

B. fallax. Fr. winter. Clay banks, paths, walls, &c. Very common in all parts, its thick vivid-green patches forming one of the chief adornments of our stone walls, especially during the winter.

B. fallax, var. brevifolia. Fr. rare, winter. On clayey ground. Not common. The Landslip, Rowborough Down, Hampstead.

B. rigidula. Fr. late summer and autumn. Walls, rocks, and dry hill-sides. Frequent. Ashy Down, the Landslip, Appuldurcombe, Chale, &c.

B. cylindrica. Fr. rare, spring and summer. Walls, banks of roads and streams. Rather common. Whitwell, Shalfleet, Haven Street.

B. vinealis. Fr. rare, spring. On walls, rocks, roots of trees, &c. Frequent. Carisbrooke Castle, Sandown Cliffs, the Landslip, &c.

B. sinuosa. Fr. unknown. Walls and stones in calcareous districts. Very rare. On rock, Brighstone Chine; I. of W. (Moss Census Cat.).

B. Hornschuchiana. Fr. spring. On the ground in fields, old quarries, and on walls. Rare. I. of W. (Moss Census Cat.).

B. revoluta. Fr. spring and summer. Limestone walls and mortar. Rare. On churchyard wall, Mottistone; I. of W. (Moss Census Cat.).

B. convoluta. Fr. spring. On the ground and on wall-tops. Rare in the Island. On the railway bank, Godshill.

B. unguiculata. Fr. winter or spring. On banks, walls, and bare ground. Common and widely distributed. Newport, the Undercliff, Chillerton, Chale, Hampstead, &c.

B. unguiculata, var. cuspidata. On banks and walls. Not common. Newport.

The *Barbulas* and *Tortulas* are known as "Screw Mosses," on account of the twisted teeth of the peristome, a feature particularly noticeable in *B. unguiculata* and *B. fallax*.

Weisia crispa. Fr. spring. On the ground and chalky banks. Not common. The Castle hill, Carisbrooke; Garstons Down.

W. tortilis. Fr. spring. Calcareous rocks, banks, and walls. Rare. Rowborough Down, the Landslip.

W. crispata. Fr. spring. In similar situations to the last. Rare. Ashley Down.

W. viridula. Fr. spring. Banks and sandy ground. Very common. Newport, the Landslip, Chillerton.

W. tenuis. Fr. summer and autumn. On inclined faces of sandstone or calcareous rocks. Rare. I. of W. (Moss Census Cat.).

Weissia, Eng. name: Beardless-moss.

Encalypta streptocarpa (Extinguisher-moss). Fr. very rare, late summer. Calcareous banks and mortar of walls. Not common. Apes Down.

Zygodon viridissimus. Fr. rare, early summer. On trees, and occasionally rocks. Frequent. Westover, Parkhurst, Yarmouth, Steephill, Hampstead, Shanklin.

Z. Stirtoni. Fr. spring, but rare. On rocks and walls; rarely on trees. Not common. Carisbrooke Castle, Westover Plantation; I. of W. (Moss Census Cat.).

Zygodon, Eng. name: Yoke-moss.

Ulotia Bruchii. Fr. late summer and autumn. On trees, rarely rocks. Not uncommon. Parkhurst.

U. crispa. On trees. Uncommon. Near Ventnor (Bloxam).

U. phyllantha. Fr. spring or summer, very rare. Distinguished by the numerous brown gemmae on the tips of the upper leaves. On trees and rocks. Rather frequent in I.W. Arreton Down, Rowborough Down. Widely distributed throughout the world, it is found on Chimborazo up to the highest limit of vegetation.

Orthotrichum anomalum, var. saxatile. Fr. early summer. On walls and calcareous rocks. Uncommon. Hampstead and Newchurch; I. of W. (Moss Census Cat.).

O. Lyellii. Fr. rare, summer. On trees. Rather common. Parkhurst, the Landslip. This moss is distinguished by the numerous brown rod-like gemmae on the surface of the leaves.

O. affine. Fr. summer. On trees, sometimes on stones and walls. Fairly common. Parkhurst, the Wilderness, Hampstead.

***O. affine**, *var. approaching fastigiatum*. On elder, Brighstone Chine.

O. diaphanum. Fr. spring. Trunks of trees and fences. Frequent. Gatcombe, Combley Farm, Garstons Down. Large form, on post, Ashey Down.

Orthotrichum, Eng. name: Bristle-moss.

Ephemerum sessile, *var. brevifolium*. Rare. Newbarn Down.

The *Ephemer*a are amongst the smallest of British mosses. The protonema of the above species forms a persistent network which helps to retain moisture and to protect the rhizoids from other plants.

Physcomitrium pyriforme (Bladder-moss). Fr. spring. On wet banks and mud from ditches. Not common. The Wilderness, Blackwater.

Funaria ericetorum. Fr. spring. Shady banks. Rare. West-over.

F. hygrometrica. Fr. all the summer. Heaths, banks, &c., especially where the ground has been burnt. Common and abundant. Parkhurst, Week's Down, Colwell Bay, St. George's Down. During the present summer, 1908, several acres of land, previously burnt, on St. George's Down, have been densely covered, in extensive patches, with the innumerable tawny-brown capsules of this moss in fruit. It has presented quite a striking sight, noticeable at a considerable distance.

Funaria, Eng. name: Cord-moss.

Aulacomnium palustre (Marsh Thread-moss). Fr. early summer. Bogs. Local. Sullens, St. George's Down (Miss Minns); the Wilderness; the Undercliff at Blackgang.

A. palustre, *var. imbricatum*. Bogs. Rare. The Undercliff, Blackgang.

Bartramia pomiformis (Apple-moss). Fr. spring. Sandy banks. Not common. Lynn Common (Miss F. M. Minns); Borthwood; Bleak Down. Receives its name "*pomiformis*" from the globular, apple-shaped fruit.

Philonotis rigida. Fr. early summer. Sandy banks and rocks in warm or sheltered situations. Rare. Shanklin.

P. capillaris. Fr. very rare, summer. In clefts of rocks and beside springs. Rare. I. of W. (Moss Census Cat.).

Leptobryum pyriforme (Golden Thread-moss). Fr. spring or early summer. On sandstone rocks, cinders, &c.; frequently in green-houses. In I. of W., only found in green-houses. Newport.

Webera nutans. Fr. early summer. Peaty and sandy soil in woods, &c. Common. Ladder Chine, Parkhurst, Headon Hill, &c.

W. annotina. Rare. Damp shady bank near Bleak Down.

* Mr. W. E. Nicholson points out that this specimen, while agreeing with the description of the *var. fastigiatum* in "Bryologia Europaea," does not satisfy the characteristics indicated by Limpricht.

W. carnea. Fr. early spring. Clay banks and ditches. Rather local. Shanklin; Ladder Chine and Whale Chine, Chale.

W. albicans. Fr. rare, spring or early summer. Roadside ditches and clay banks. Fairly frequent. Ningwood, Wootton, Bleak Down, Whale Chine, Shanklin, Carisbrooke, Arreton.

Webera, Eng. name: Thread-moss.

Epipterygium Tozeri. Fr. rare, spring. On sandstone. Rare. Apse.

Bryum inclinatum. Fr. summer. On dry heaths, banks, and walls. Has been found only on the railway bank, Godshill.

B. pallens. Fr. summer. On wet clay or sand. Not common. At the foot of the cliffs near Shanklin; by the roadside, Bleak Down; also on the cliffs at Headon Hill.

B. bimum. Fr. summer. In boggy places. Not common. Whale Chine, below Ladder Chine, the Undercliff.

B. pallescens. Rocks, walls, &c. Rare. I. of W. (Moss Census Cat.).

B. intermedium. Fr. summer and autumn. Wet ground and damp shady walls. Not common. I. of W. (Moss Census Cat.); Bonchurch (Venables, 1860).

B. caespitium. Fr. summer. Dry banks, rocks, and walls. Common. Whitcombe, St. George's Down.

B. capillare. Fr. summer. On walls, rocks, tree trunks, &c. Abundant and frequent. The Landslip, Steephill, Rowborough Down, Shanklin, the cliffs at Headon Hill, &c.

B. obconicum. Fr. summer. Dry heaths and rocks. Rare. Shanklin (Herb. Hunt).

B. Donianum. Fr. summer. Gravelly banks. Rather common. Blackwater, Calbourne, Atherfield.

B. erythrocarpum. Fr. summer. Sandy and peaty heaths. Common. St. George's Down, Colwell Bay, the Landslip, Stenbury Down, Parkhurst. The crimson capsules of this moss when fruiting abundantly in wide patches produce a brilliant and beautiful effect. The red gemmae, borne at the base of the stem of this and the following species, should be observed with the microscope.

B. rubens. Fr. summer. Sandy ground. Very rare. Brighstone Down.

B. atropurpureum. Fr. early summer. Clay banks, roadsides, &c. Common. Parkhurst, the Landslip, &c.

B. atropurpureum, var. gracilentum. Fr. early summer. On clay banks. Not common. The Landslip; Heytesbury (J. H. Williams).

B. murale. Fr. early summer. On mortar of walls. Fairly common. Gatcombe, Whitwell.

B. argenteum (Silver Moss). Fr. late autumn. Waste ground, cinders, paths, walls, &c. Frequent in all parts.

B. argenteum, var. lanatum. On dry warm rocks and walls.

Not common. Carisbrooke Castle, the Undercliff, Froglands. Hoary with the hyaline leaf-points.

B. roseum. Fr. very rare, late autumn. Woods, and moist or shady places on hills. Not common. Combley Wood, Brighstone Down, Upper Appleford. Grows in fine dark-green rosettes.

Mnium affine. Fr. rare, in spring. Damp ground in woods, &c. Frequent. The Undercliff, Carisbrooke, Arreton, &c. Also a variety with very decurrent leaves, Newbridge marsh.

Mn. affine, var. elatum. Damp shady banks, bogs, and marshes. Uncommon. Arreton.

Mn. rostratum. Fr. spring. Rocks and shady banks in woods. Frequent. Combley, Apes Down, the Undercliff.

Mn. undulatum (Palm Moss). Fr. rare, spring. Shady woods. Frequent; locally abundant. Westover, the Landslip, Tolt Copse, Parkhurst, &c. A tall graceful plant with wavy leaves.

Mn. hornum. Fr. spring. Sandy banks in woods, &c. Fairly common. The Wilderness; Hampstead; Dark Lane, Whitcombe.

Mn. stellare. Fr. very rare, summer. Shady woods and rocks. Not common. The Landslip, Shanklin Down.

Mn. punctatum. Fr. spring. Damp, sandy, rocky places. Rather common. The Landslip, Hampstead, Steephill, Shanklin Chine.

Mn. subglobosum. Fr. spring. Marshes and sides of wet ditches. Uncommon. Whitwell, the Wilderness.

Mnium, Eng. name: Thyme Thread-moss.

Fontinalis antipyretica (Water-moss). Fr. summer. Streams, submerged. Very local. Carisbrooke.

Cryphaea heteromalla. Fr. early summer. Trunks of trees, frequent; rarely on stones. Dark Lane, Whitcombe; the Undercliff; Tolt Copse; Steephill. Bears numerous capsules close to the stem and on one side of it only.

Neckera crispa. Fr. rare, early summer. Shady banks and copses on the chalk downs. Fairly abundant. Tolt, Carisbrooke Castle, Garstons, Brighstone Down. A handsome robust moss with large undulate leaves.

N. pumila. Fr. rare, early summer. Trunks of trees, rarely rocks. Frequent. Apes Down, Whitcombe, &c.

N. complanata. Fr. rare, spring. Trunks of trees, banks and rocks. Very abundant. Combley and other woods, the Landslip, the Undercliff, Hampstead, Shanklin, &c.

Homalia trichomanoides. Fr. early spring. Trunks of trees, and rocks in shady places. Rare. Dark Lane, Whitcombe.

Leucodon sciurioides. Fr. very rare, spring. Trunks of trees, especially ash. Rather rare. Blackwater, Shanklin Down.

Antitrichia curtipendula (Wing-moss). Fr. rare, spring. On rocks and trees. Rare. I. of W. (Moss Census Cat.). The curved teeth on the leaf-points should be observed with the microscope.

Porotrichum alopecurum (Tree Moss). Fr. rare, autumn. Shady woods and banks, and rocks by streams. Frequent and abundant. Steephill, the Landslip, Carisbrooke, Tolt, Westover, &c.

Anomodon viticulosus. Fr. rare, spring. On roots of trees and on rocks. Frequent. Carisbrooke Castle; the Landslip; Tolt, Dark Lane, Whitcombe; Niton; Westover; Plaish; &c.

Leptodon Smithii (Curled Wing-moss). Fr. rare, spring. On trunks of trees and on rocks. Frequent. Appuldurcombe; Gatcombe; Horringford; Yarmouth; Westover; Newclose, near Newport. A curious moss, very graceful in form when the branches are moistened and pressed flat, but usually seen curled up in balls, which have been compared to the head of a crozier.

Thuidium tamariscinum (Feather Moss). Fr. not common, autumn and winter. Shady woods. Common. Parkhurst Forest and other woods.

Th. delicatulum. Fr. winter. On calcareous soil, amongst turf. Rare in most parts, but abundant on lawn at Westover; Steephill; Carisbrooke Castle.

Camptothecium sericeum. Fr. spring. Trunks of trees, and on stone walls. Common and abundant. The Landslip, Godshell, Appuldurcombe, Carisbrooke, &c. This very handsome moss is abundant on old gravestones and church walls.

C. lutescens. The downs, old quarries, and dry hedgebanks. Common. Ashey, St. Lawrence, Arreton, Westover, Luccombe Down, &c.

Brachythecium glareosum. Fr. very rare, winter. Calcareous banks and quarries. Rare. Ashey Down.

B. albicans. Fr. rare, winter and early spring. Stony places on siliceous soil. Not common. Headon Hill, St. George's Down, Hampstead. Also a robust form found on gravelly soil, St. George's Down.

B. salebrosum. Fr. autumn. Roots of trees, and on rocks. Rare. Hampstead.

B. salebrosum, var. palustre. Fr. autumn. On damp clay. Rare. Below Ladder Chine; Hampstead.

B. rutabulum (Common Rough-stalked Feather-moss). Fr. winter. On earth, walls, trees, &c. Abundant everywhere. This fine vigorous moss, though very variable, may commonly be distinguished by the silvery tips of its branches. It flourishes amongst the grass of meadows and lawns and on almost every roadside bank.

B. rutabulum, var. robustum. Marshy ground. Not common. The Wilderness, the Undercliff.

B. velutinum (Velvet Feather-moss). On stumps and roots of trees, and on rocks and stones. Fairly common. Steephill, America Woods, Bowcombe, Newport, Parkhurst.

B. purum. Fr. in spring, but rare. Woods, banks, &c. Common and abundant. Parkhurst, the downs, &c.

Eurhynchium piliferum. Fr. very rare, winter. In woods, on grassy banks. Uncommon. I. of W. (Moss Census Cat.).

E. crassinervium. Fr. rare, autumn. On rocks and stony ground in shady places. Fairly common. Westover, Shanklin, Stenbury Down, Whitcombe, Appuldurcombe, Chale.

E. crassinervium, var. tenue. Rare. On rock, Steephill Castle.

E. speciosum. Fr. winter. Stones and tree roots, usually near water, and on marshy ground. Uncommon. The Wilderness.

E. praelongum. Fr. winter. Hedgerows, banks, stumps, &c., especially on clay soil. Very common in all parts of the Island.

E. praelongum, var. Stokesii. Fr. winter. Similar habitat. Rather common. Westover, Steephill, Bembridge.

E. Swartzii. Fr. rare, winter. Hedgerows and stumps of trees, especially on chalk. Frequent. Westover, Shorwell, Carisbrooke, Sandown, the Landslip, Rowborough Down, &c.

E. Swartzii, var. rigidum. In exposed situations on sandy or chalky soil. Not uncommon in the Isle of Wight, but rare elsewhere. Rowborough Down; Westover Plantation. It is recorded for Yorkshire, Northumberland, and Sutherland.

E. abbreviatum. Fr. autumn to spring. Shady woods. Rare. I. of W. (Moss Census Cat.).

E. pumilum. Fr. rare, winter. Stony ground, rocks, &c., in shady places. Fairly common. Shanklin, the Landslip, Westover, Steephill, Shorwell. This is the most slender of the trailing mosses; exceedingly delicate and filmy.

E. Teesdalei. Fr. winter. Rocks and stones by streams. Rare. Gatcombe Mill.

E. tenellum. Fr. spring. Rocks and stones. Frequent. Carisbrooke Castle, the Undercliff, Westover, Steephill, the Landslip, &c.

E. myosuroides. Fr. autumn and winter. Rocks, stumps, and base of trees. Frequent. Hampstead, Carisbrooke, the Landslip, Westover, Steephill, Appuldurcombe.

E. myurum. Fr. spring. Tree-stumps, rocks, flints, or earth. Fairly common. Swainstone, Apes Down, Wootton, Combley Wood.

E. circinatum. Fr. spring, but not found in Great Britain. On chalk soil; also on rock. Plentiful in a few localities. Steephill, Carisbrooke Castle, the Undercliff at Blackgang, Newchurch.

E. striatum. Fr. late autumn. On the ground and on rocks in woods. Frequent. Apes Down, Steephill, Westover.

E. striatulum. Fr. rare, winter. Shady rocks, &c. Very rare. Near Ventnor (Bloxam).

E. rusciforme. Fr. autumn. Rocks and stones in and near streams; usually submerged. Not uncommon. Carisbrooke—on stones submerged in the river Lukely; Alverstone Mill, Westover, Blackgang, Gatcombe Mill.

E. murale. Fr. late winter. On rocks and walls in shady places. Not uncommon. Whitwell, the Landslip, Carisbrooke Castle, Steephill, Bleak Down, Appuldurcombe.

E. confertum. Fr. winter. Stones and stone walls, stumps of trees in shady places. Common. Niton, Newport, Blackwater, Combley Wood, the Landslip, &c.

E. megapolitanum. Fr. winter. Usually on stony and sandy ground. Very rare. Shady bank, Bleak Down.

Plagiothecium depressum. Fr. very rare, winter. Foot of trees and shaded rocks in calcareous districts. Very rare. The Undercliff (Dixon, Vic. Hist. Hants).

P. elegans. Fr. very rare, spring. On the ground in woods, and on rocks. Uncommon. Apse; copse in the Wilderness.

P. denticulatum. Fr. summer. On the ground under hedges, roots of trees, rocks, &c.; chiefly in woods. Frequent. Arreton; Brighstone Chine; copse in the Wilderness.

P. silvaticum. Fr. rare, summer. Peaty or sandy soil, rocks, in woody places. Not common. Dark Lane, Whitcombe; Arreton, Gatcombe, Shanklin Chine.

P. undulatum. Fr. summer. On the ground in woods. Not common. Marvel Copse. A large robust plant with whitish-green undulate leaves, growing in soft extended mats.

Amblystegium serpens. Fr. spring. On the ground, dead wood, &c. Frequent. Arreton, Whitcombe, Steephill, the Landslip, Parkhurst, the Undercliff, &c. Slender and prostrate with very small leaves.

A. Juratzkanum. Fr. spring. Damp shady walls, damp meadows, roots of trees. Rare. Whitcombe.

A. varium. Fr. spring. On the ground, stumps of trees, &c., in moist situations. Not common. Whitecroft, Hampstead.

A. filicinum. Fr. in spring, but rare. Damp ground, stones and rocks by streams chiefly in chalk districts. Common. Shanklin, Carisbrooke, Whitwell, Westover, Alverstone Mill, Blackgang, Whale Chine, Luccombe Chine, &c.

A. filicinum, var. Vallisclausae. On damp shady rocks by streams. Very rare. Blackgang.

Hypnum riparium. Roots of trees, stones, &c., in or near water. Not common. Carisbrooke—submerged in stream; Steephill, Hampstead.

H. chrysophyllum. Fr. very rare, summer. On chalky soil. Uncommon. Asheys Down.

H. hispidulum, var. Sommerfeltii. Fr. summer. About the roots of trees, on stones, &c., principally on chalky soil. Rare. I. of W. (Moss Census Cat.).

H. commutatum. Fr. early summer. Bogs and streams. Fairly common. Yarmouth, the Landslip, the Undercliff, the Wilderness.

H. cupressiforme. Fr. winter and spring. Trunks and stumps of trees, on walls, earth, &c. Very common. Parkhurst, Steephill, Rowborough Down, Appuldurcombe, &c.

H. cupressiforme, var. filiforme. On trunks of trees in woods. Frequent. Parkhurst.

H. cupressiforme, var. brevisetum. Uncommon. Gatcombe.

H. cupressiforme, var. ericetorum. On heaths and in dry woods. Frequent. Parkhurst, Westover.

H. cupressiforme, var. tectorum. On rocks, walls, and roofs. Frequent. Ashey, Swainstone, Godshill, Westover.

H. cupressiforme, var. elatum. On the ground on chalk soil. Fairly common. Ashey, Westover, Headon Hill, Hampstead, Steephill.

H. cupressiforme, var. resupinatum. On trees, walls, &c. Common. Parkhurst, Marvel Copse, Westover, Steephill, Combley.

H. molluscum. Fr. summer. On chalk, less often on sand. Plentiful on north side of Garstons; Ashey, and other downs; Marvel Copse. A beautiful moss growing in close curly tufts, golden green.

H. cordifolium. Fr. rare, summer. In marsh. Locally abundant. The Wilderness.

H. cuspidatum. Fr. summer. Wet meadows, marshes, &c. Common and abundant. The Wilderness, Parkhurst, Newtown, Gatcombe, the Undercliff, Hampstead, Shanklin, Westover, &c.

H. Schreberi. Fr. very rare, autumn. Woods and heaths. Local. Headon Hill; I. of W. (Moss Census Cat.).

Hylocomium splendens. Fr. rare, spring. Woods and downs. Frequent. Appuldurcombe, Parkhurst, Headon Hill, Brighstone, Bowcombe, Luccombe, and other downs.

Hyl. loreum. Fr. spring. On ground and rocks in woods. Rare (Venables).

Hyl. squarrosum. Fr. rare, winter and spring. Grassy banks, hedgerows, and woods. Frequent and abundant. Parkhurst, Carisbrooke Castle moat, Westover, Shanklin Down, Steephill.

Hyl. triquetrum (Stag's-horn Moss). Fr. rare, winter. In and around woods, and at the foot of downs. Frequent and abundant. Garstons and other downs, Tolt, Westover, Hampstead, &c.

The term "Feather Moss" is applied indiscriminately to several of the more common *Hypnaceae* with pinnate foliage, such as *Eurhynchium praelongum*. Also to *Thuidium tamariscinum*, &c.

FLOWERING PLANTS AND FERNS AND THEIR ALLIES.

By **FREDERIC STRATTON, F.L.S.**

PROBABLY there is no place in the British Isles in which the study of Natural History could be more readily pursued than the Isle of Wight. Certainly there are few if any areas of the size of the Island which contain so large a number of wild plants. With an area of only about 93,000 acres, the number of plants hitherto found and recorded is no less than 1032, and this enumeration does not include sub-species nor varieties nor, of course, Mosses, Liverworts, Lichens, Fungi, or Algae. In the whole of Britain the number of wild plants calculated in a similar manner appears to be 1958.

The causes which have contributed to the existence of so large a Flora are not far to seek. We have, first, numerous geological strata. Running through the Island from East to West there is the Chalk range of hills, which, very narrow at the East and until about a mile beyond Newport westward, widens there southward, extending beyond Gatcombe and Chillerton, returning northwards by Shorwell and Brighstone, and then becoming very narrow again until their termination at the Needles. This range and the outliers behind Shanklin, Bonchurch, Ventnor, St. Lawrence, and Niton, have a special Chalk flora, though probably the caps of flint gravel affect the character of this flora very considerably. To the North of the central Chalk range the strata consist chiefly of Tertiary clays, with limestone cropping up to the surface occasionally, revealing itself usually by plants which are lime-loving, or, at least, lovers of a dry soil. There is also a narrow band of sands running parallel to the Chalk and not far from it, the sections of which are well seen in Whitecliff Bay and Alum Bay.

On the South side of the central Chalk downs the strata are the Upper Greensand and Gault, neither of which is very broad, and the

Lower Greensand, which forms the largest extent of surface, reaching in most cases to the cliffs and shores, and the Wealden, which has a very limited area of exposure at Sandown and Brighstone. Though it would not probably be found that each separate stratum has a special flora of its own, we may certainly recognize the characteristic plants of the clays, the chalk, and the sands.

The Chalk range is broken through in three places: at Brading by the Eastern Yar, at Freshwater by the Western Yar, and at Newport by the Medina, these three rivers, and the smaller streams at Newtown and Kings Quay, running into the Solent and forming estuaries for a considerable portion of their length, and these and the shores of the Island towards the Solent afford favourite ground for many salt-loving and mud-loving plants.

In two places, St. Helens and Yarmouth, there is some considerable extent, especially at St. Helens, of blown sand, which provides habitats for a number of plants which love the deep soil into which their roots can run.

The cliffs and shores on the South side of the Island maintain an entirely different lot of plants.

The general character of the Flora does not differ much from that of the mainland of Hampshire; but according to a recent computation there are 148 species absent from the Island which occur on mainland Hants, whilst we have 21 species which are not found there. The total number of species found in Hampshire, including the Island, is 1180.

The Island has for many years past been divided for the purposes of botanical investigation into six districts, formed by taking as boundaries the water-partings which divide the watersheds, and these are as follows:—

The whole area is divided into two main districts, the dividing boundary of which is the summit of the Chalk downs, varied by the boundary of the Medina watershed. These are numbered, in relation to the rest of Hampshire, IV and V. No. IV is again divided into four sub-districts: No. 1 being comprised within the lines of the water-partings from the Chalk down near Shalcombe to Freshwater Bay, and from the same point to the Hampstead cliffs; No. 3 is the watershed of the Medina; and No. 2 the parts between Nos. 1 and 3, and No. 4 the parts East of No. 3.

The Southern District No. V is divided into two sub-districts by the highest ridge between the down above Chale and Roeken End.

We have, therefore, two main districts and six sub-districts, and in any future separate Flora of the Island it will be desirable as far as possible to indicate the distribution of the plants in the Island as occurring in or absent from the several sub-districts.

The expressions "common," "frequent," &c., must be read in relation to the various kinds of habitat, such as "marshes," "downs," "arable land," &c. Plants may be quite abundant in restricted

localities, or, on the other hand, may occur sparingly over wide areas.

There are scattered records of plants growing in the Isle of Wight in books written before the beginning of the 19th century, but the first collection of records into an orderly "Flora" was made by Mr. W. D. Snooke, whose "Flora Vectiana" was published in 1823. Dr. William Arnold Bromfield, who was a contemporary of Mr. Snooke, and corresponded with him, and who resided at Ryde, wrote many articles on "Plants growing wild in Hampshire," which were published in the early volumes of the "Phytologist," in the years 1849 and 1850. Dr. Bromfield had made considerable progress with his "Flora Vectensis" before his death, which occurred whilst he was travelling in Syria in 1851. This work, as issued from the press in 1856, was edited by Sir William Jackson Hooker and Dr. Bell Salter, and though naturally not as good a book as it might have been had Dr. Bromfield lived to complete it, it has remained to the present time the latest separate Flora of the Island. A herbarium of plants collected in the Island by Dr. Bromfield is at the School of Art at Ryde, and a duplicate collection is in the Royal Herbarium at Kew, together with some of his MSS. The volumes of the "Journal of Botany" from the year 1863 downwards, and especially volume IX (1871), which contained the late Mr. A. G. More's "Supplement to the Flora Vectensis," have many records of Isle of Wight Botany. In 1883 the late Mr. Frederick Townsend published his "Flora of Hampshire including the Isle of Wight," a second edition of which appeared in 1904, little more than a year before his death.

It may be useful to mention a few of the principal British descriptive Floras which a student of Botany will find helpful, and one, at least, of which he will find it absolutely necessary to possess. The edition of "English Botany" edited by the late Dr. Boswell Syme stands first, both as regards his very able descriptions and (though in a much lower degree) for the coloured figures of the plants. But this fine work, which fills, with its supplement, 13 volumes, will not be, from its cost, within the means of many students. Bentham and Hooker's "Flora of the British Isles," which gives a small woodcut of each plant in addition to the descriptions, is an excellent book, and in some ways better for beginners than Professor Babington's "Manual," which, however, will almost certainly be for some years to come, as it has been for very many years in the past, the British botanist's "Vade mecum." There are other books of a somewhat different character, such as John's "Flowers of the Field," which can be recommended, but which will hardly, for students, take the place of those in the first rank.

In the following list, where a second Latin name within brackets occurs, it is taken from the List of British plants issued by the British Museum Department of Botany in January, 1907, as amended

in December, 1907 (see "Journal of Botany" of that date), which was compiled by Dr. A. B. Rendle, F.L.S., and Mr. James Britten, F.L.S., in accordance with the International Rules of Botanical Nomenclature adopted by the Botanical Congress at Vienna in 1905.

DICOTYLEDONES

RANUNCULACEAE

Clematis Vitalba, *L.* Traveller's Joy. Old Man's Beard. (Pethwine, Wight.) June to September. Abundant on chalk and limestone. Carisbrooke and similar localities on the Chalk.

Thalictrum flavum, *L.* Meadow Rue. June to August. Formerly found on the north shore of Wootton Creek, and in Lee meadows. It is believed now to be extinct.

Anemone nemorosa, *L.* Wood Anemone. April and May. Common in woods: Alvington; Staplers; Standen; Quarr; Bordwood; &c.

Adonis autumnalis, *L.* (*A. annua*, *L.*). Pheasant's-eye. July. Arable lands on the south of the Island; not common: Shorwell; Brighstone; Luccombe; Bonchurch; St. Lawrence; Parkhurst.

Myosurus minimus, *L.* Mouse-tail. June and July. Arable lands; not common: Whippingham; Preston, near Ryde; Shorwell; Godshill; and the south of the Island.

Ranunculus peltatus, *Fries.* Water Crowfoot. April to June. Ponds and streams. This plant, and its variety *R. floribundus*, *Bab.*, are the commonest of the Water Crowfoots in the Island.

R. heterophyllus, *Fries.* Various-leaved Water Crowfoot. April to June. In similar localities, but less common.

R. Drouetii, *F. Schultz.* May and June. Marsh ditches: Freshwater Gate, and at Brading.

R. trichophyllus, *Chaix.* Water-fennel. May and June. Ponds: Carisbrooke; Ryde; Brading Harbour; and Sandown.

R. Baudotii, *Godr.* May to July. Similar localities, but preferring brackish water: Springvale; St. Helens; Brading Harbour. The var. *confusus* (*R. confusus*, *Godr.*) is also found in Brading Harbour, and near Sandown.

R. Lenormandi, *Schultz.* April to August. Pools and ditches: Pan Common; Rookley Wilderness; Alverstone.

R. hederaceus, *L.* Ivy-leaved Water Crowfoot. April to Sept. Similar localities, and more common.

R. sceleratus, *L.* Celery-leaved Crowfoot. June to September. Ditches and wet places; not common: Freshwater and Yarmouth; Thorley; both sides of the Medina below Newport; Hardingshute; St. Helens; Bembridge; Brading; Sandown; Newchurch.

R. Flammula, *L.* Lesser Spearwort. June to August. Wet places; common.

R. Lingua, *L.* Greater Spearwort. June to August. Streams and ditches; rare: Freshwater; Fernhill, Wootton.

R. auricomus, *L.* Wood Crowfoot. Goldilocks. Apr. and May. Woods and hedges; not common: Calbourne; Sluccombe Copse, Shorwell; Kingston; Kerne; Lorden Copse, near Shorwell; Westridge Copse; near Carishbrooke Castle; Quarr; Apley; Nunwell.

R. acris, *L.* Upright Crowfoot. Buttercup. June to August. Meadows; common.

R. repens, *L.* Creeping Buttercup. May to August. Meadows and waste places; common.

R. bulbosus, *L.* Bulbous Crowfoot. May and June. Similar localities, and equally common.

R. hirsutus, *Curt.* (*R. sardous*, *Crantz*). Hairy Buttercup. June to September. Waste ground; not very common: Freshwater; Newtown; Ningwood; Gurnard; Newport; East Cowes; Wootton; Brighstone; Blackgang; Sandown; St. Helens; Nettlestone; Bembridge.

R. parviflorus, *L.* Small-flowered Crowfoot. April to June. Dry banks and cornfields; not very common: Freshwater; Newport; and other places, both north and south of the Chalk.

R. arvensis, *L.* Corn Crowfoot. June to August. Arable fields; not very common: Freshwater; Shalfleet; Newport; Cowes; Ryde; Brighstone; Shanklin; Niton; Newchurch.

R. Ficaria, *L.* Lesser Celandine. Pilewort. March to May. Damp ground; very common.

Caltha palustris, *L.* Marsh Marigold. Kingcups. March to June. Marshes; common.

Helleborus viridis, *L.* Green Hellebore. March and April. Woods; rare: Woodhouse Copse, Whippingham; near Blackbridge, Haven Street.

H. foetidus, *L.* Stinking Hellebore. Setterwort. Feb. to April. Bushy places. Doubtfully wild at Apes Down Farm. Well established, if not indigenous, in the neighbourhood of St. Lawrence.

Aquilegia vulgaris, *L.* Columbine. May to July. Copses and bushy places: Freshwater; Apes Down; Alvington; Pan Down; East Standen; Tolt; Quarr; Shorwell; Appuldurcombe; Lake.

Delphinium Ajacis, *Reich.* Larkspur. June and July.

A casual occasionally in cornfields: Westbrook; Chale; Undercliff.

Aconitum Napellus, *L.* Monkshood. June and July.

Rare, and possibly only naturalized. Recorded by Dr. Bromfield, 11th June, 1840, as growing in some plenty by the brook near Upper Calbourne Mill; it was still growing there in 1898; also by the side of the stream near Pan Mill, Newport, 1840—1908.

BERBERIDACEAE

Berberis vulgaris, *L.* Barberry. May and June.

Sparingly at Goldens, Freshwater; near Thorley; Carisbrooke Castle; Monkham, near Rowridge; near Sheat. Probably either planted, or an escape, in all the localities.

NYMPHAEACEAE

Nymphaea alba, *L.* (*Castalia alba*, *Greene*). White Water-lily.

June and July. Naturalized in a few ponds.

PAPAVERACEAE

Papaver somniferum, *L.* Opium Poppy.

Occasionally in waste ground as an escape from gardens.

P. Rhoëas, *L.* Red Poppy. Corn Rose. May to August.

Common in cultivated land. A variety, *strigosum*, with hairs adpressed to the stem, has been found at Asheys, Nunwell, Kerne, and Bembridge.

P. Lamottei, *Bor.* (*P. dubium*, *L.*). Smooth long-headed *P.* May to July. Cultivated and waste ground: Carisbrooke; Niton; Redcliff; Newchurch; Brading.

P. Lecoqii, *Lam.* Yellow-juiced *P.* May to July.

Similar localities; rare: Wellow; Carisbrooke; Gatecombe; Blackgang; Undercliff; Bembridge.

P. Argemone, *L.* Prickly Long-headed *P.* May to July.

Cornfields; not very common: Yarmouth; Wellow; Newport; Calbourne; Brighstone; Undercliff; Yaverland; Brook.

P. hybridum, *L.* Prickly Round-headed *P.* May to July.

Similar localities, but rare: Freshwater; Yarmouth; Wellow; Calbourne; Carisbrooke; Shorwell; &c.

Glaucium luteum, *Scop.* (*G. flavum*, *Crantz*). Yellow-horned *P.* May to August. Cliffs and shores all round the Island.

Chelidonium majus, *L.* Greater Celandine. May to August.

Hedges and waste places near dwellings; frequent: Freshwater;

Carisbrooke; Shorwell; Niton; Godshill; Nettlestone; Newchurch; Bordwood; Sandown; Ventnor.

FUMARIACEAE

Corydalis claviculata, *DC.* Climbing Fumitory. June to Aug. Woods and hedges; rare: near Sandown; Bordwood; Newchurch.

Fumaria pallidiflora, *Jord.* Pale-flowered F. May to Nov. Hedges and waste ground; not common: Brightstone; Steephill; St. Lawrence; Bonchurch.

F. Boraei, *Jord.* Boreau's Fumitory. May to October. Similar situations; rare: near Gurnard.

F. confusa, *Jord.* (F. Bastardi, *Bor.*). Rampant F. June to Sept. Cultivated ground; not uncommon: Carisbrooke; shore west of Ryde.

F. muralis, *Sond.* Wall Fumitory. June to September. Hedges; rare: Freshwater Gate; Ryde; Alverstone.

F. officinalis, *L.* Common Fumitory. June to September. Cultivated ground; common.

F. Vaillantii, *Lois.* Vaillant's Fumitory. June to September. Cultivated ground. Once found near Ryde (1855).

F. densiflora, *DC.* Close-flowered F. June to September. Cultivated ground; rare: Yarmouth.

CRUCIFERAE

Cakile maritima, *Scop.* Purple Sea Rocket. June to September. Shores: Norton; Totland; Gurnard; Osborne; Sea View; Sandown.

Crambe maritima, *L.* Sea-kale. June to September. Seashores; sparingly: Totland; Norton; Newtown; Osborne; Steephill.

Raphanus Raphanistrum, *L.* Wild Radish. April to Nov. Cultivated ground; not very common: Carisbrooke; East Cowes; Gurnard; Quarr; Nettlestone; Sandown; Niton; Godshill.

R. maritimus, *Sm.* Sea Radish. June to September. Cliffs; rare: Freshwater Gate to the Needles; Afton Down; Steephill Cove; and shores between Bonchurch and Sandown.

Brassica sinapis, *Vis.* (*Sinapis arvensis*, *L.*). Charlock. May to September. Cultivated ground; very common.

B. alba, *Boiss.* (*S. alba*, *L.*). White Mustard. May to July. Cultivated and waste ground; not uncommon; chiefly on chalk: from Freshwater to Yaverland.

B. nigra, *Koch* (*S. nigra*, *L.*). Black Mustard. May to Sept.

Waste ground; not uncommon: Freshwater; Yarmouth; Newport; Binstead; Niton; Ventnor; Sandown; &c.

B. oleracea, *L.* Sea Cabbage. May and June.

Cliffs. Recorded 250 years ago, by Lobel; but only seen occasionally of late years, at Brook, Ventnor, Sandown, and Culver.

B. Napus, *L.* Rape. Navew.

Arable and waste ground. Escape from cultivation.

B. campestris, *L.* Swede Turnip.

Arable ground. An occasional escape.

B. rapa, *L.* Turnip.

Arable ground. An occasional escape.

Diplotaxis tenuifolia, *DC.* Wall Rocket. June to September. Walls and cliffs; rare: Cliff-end Fort; cliffs, Ventnor and Bonchurch.

D. muralis, *DC.* Wall Mustard. August and September.

Waste ground: Ventnor. Probably introduced.

Sisymbrium officinale, *Scop.* Hedge Mustard. May to July.

Hedges and waste ground. Common.

S. Sophia, *L.* Flixweed. June to August.

Waste ground: Alverstone, near Sandown.

S. Alliaria, *Scop.* (*Alliaria alliacea*). Jack-by-the-hedge. Sauce-alone. April to June. Hedges and damp places; common.

S. Thalianum, *J. Gay.* Thale Cress. April to September.

Dry waste places, and walls; not uncommon: near Ryde; Cowes; Whippingham; Shorwell; Chale; Sandown.

Erysimum cheiranthoides, *L.* Treacle Hedge Mustard. June to August. Once found near Cowes, but probably planted.

Hesperis matronalis, *L.* Dame's Violet. May to July.

Scarcely naturalized in 1806 at Bonchurch.

Matthiola incana, *Br.* Sea Stock. April to October.

Cliffs: Compton to Freshwater Gate, abundant, but not easily accessible. Abundant in 1823, and still so in this, the only British locality. Formerly at Steephill.

Cheiranthus Cheiri, *L.* Wallflower. April to June.

Walls and cliffs: Yarmouth; Carisbrooke; Brading; Heasley; Bonchurch; Sandown. Probably naturalized only.

Cardamine pratensis, *L.* Lady's Smock. Cuckoo Flower. April to June. Wet meadows; common.

C. hirsuta, *L.* Hairy Bitter-cress. March to August.

Banks and walls, and moist waste places; fairly common.

C. sylvatica, *Link* (*C. flexuosa*, *With.*). Wood Cr. Mar. to Aug.

In similar situations, and moist shady places.

Arabis hirsuta, *Scop.* Hairy Rock Cress. June to August.

Dry banks and walls: High Down, Freshwater; Carisbrooke Castle; Whitepit Lane, Newport.

Barbarea vulgaris, *R.Br.* (*B. lyrata*, *Asch.*). Yellow Rocket. May to August. Moist hedge-banks, and borders of streams; not very common: near Newport; and other localities.

B. praecox, *R.Br.* (*B. verna*, *Asch.*). Winter or Land Cress. March to October. Cultivated fields, and waste places; not uncommon.

Nasturtium officinale, *R.Br.* (*Radicula Nasturtium-aquaticum*). Water Cress. May to October. Streams and ditches; abundant.

N. terrestre, *R.Br.* (*R. palustris*, *Moench*). Marsh Yellow Cress. August to October. Margins of ponds; not common: Ninham; Hardingshute; Whitefield; the Grove, Adgestone; Langbridge; Godshill Park; Shide.

Cochlearia officinalis, *L.* Com. Scurvy-grass. April to August. Cliffs; rare: Watcombe Bay; Scratchells Bay.

C. danica, *L.* Danish Scurvy-grass. April to June. Sea coast; rare: Freshwater; King's Quay; Bembridge.

C. anglica, *L.* English Scurvy-grass. April to July. Estuaries and muddy shores; rare: Yarmouth; Newtown; Medina below Newport; Wootton; Brading.

C. Armoracia, *L.* (*Armoracia rusticana*, *Gaertn.*). Horse-radish. Occasionally found as an escape.

Draba verna, *L.* Whitlow Grass. March to May. Dry banks and walls; common.

Alyssum calycinum, *L.* (*A. alyssoides*, *L.*). Alyssum. June to August. Cultivated grounds; rare: St. George's Down, 1871 (only one plant); Sandown; Shanklin.

A. maritimum, *L.* Seaside Alyssum. August and September. Waste ground near the sea; naturalized only: Cowes; Morton; Bembridge; cliff west of Sandown; Ventnor.

Thlaspi arvense, *L.* Penny-cress. May to July. Cultivated land; rare: St. George's Down; Shide; Whitcombe; Newchurch; Sandford; St. Helens.

Iberis amara, *L.* Bitter Candytuft. June and July. Waste ground on chalk chiefly; rare: cliffs above Alum Bay; Grange Chine, Brighstone. Always an escape.

Capsella Bursa-pastoris, *DC.* Shepherd's Purse. Mar. to Nov. Waste ground; very common.

Lepidium campestre, *R.Br.* Mithridate Pepperwort. May to Aug. Cultivated and waste ground; not common: Totland; Shalfleet; Newtown; Cowes; Gunville; Ryde; Apse; Hardingshute; Brading.

L. Smithii, *Hook.* (*L. heterophyllum*, *Benth.*). Smooth Pep. April to August. Waste ground; not common: Thorley; Debbourne and other places between Cowes and Newport; Wootton; Bembridge; Seagrove.

L. Draba, *L.* Whitlow Pepperwort. May to July. Waste ground; probably introduced: St. Helens Mill; Yarmouth Mill.

L. sativum, *L.* Garden Cress. Occasionally found as an escape.

Senebiera Coronopus, *Poiret* (*Coronopus procumbens*, *Gilib.*). Common Swine Cress. May to September. Waste ground; common.

S. didyma, *Sm.* (*C. didymus*, *Sm.*). Lesser Swine Cress. June to October. Waste ground; less common than *S. Coronopus*, and rare south of the Chalk: Dodner; East Cowes; Whippingham; Niton (one plant).

Camelina foetida, *Fries.* Once observed (1870) in a field of oats and vetches at Pan, near Newport.

Isatis tinctoria, *L.* Dyer's Weed. Observed in 1858 and 1859 in a field of sown grass at Bembridge.

RESEDACEAE

Reseda lutea, *L.* Base Rocket. Wild Mignonette. June to Aug. Fields and waste ground; frequent on the chalk downs; less common on clays or sand.

R. Luteola, *L.* Dyer's Rocket. Weld. June to September. Similar localities; frequent.

CISTACEAE

Helianthemum vulgare, *Gaert.* (*H. Chamaecistus*, *Miller*). Rock Rose. June to September. Dry waste places, mostly on the Chalk; common.

VIOLACEAE

Viola palustris, *L.* Marsh Violet. April to June. Wet pastures and thickets; uncommon: The Wilderness; Horringford; Newchurch; Alverstone; Apse.

V. odorata, *L.* Sweet Violet. March to May. Hedges and copses; common. The white-flowered variety is the most abundant, but plants with reddish-purple flowers are occasionally found, and less commonly bluish-purple.

V. hirta, *L.* Hairy Violet. March to June. Chalk downs and dry places; common.

V. Riviniana, *Reich.* Gerard's Dog Violet. April to June. Woods and hedges; common in all the districts.

V. Reichenbachiana, *Bor.* (*V. sylvestris*, *Lam.*). Reichenbach's Dog Violet. April to June. Copses; not common: by the Medina above West Cowes; Ashley; Shorwell; Bembridge; Puckpool; Luccombe; Gatecombe; Little Pan, near Newport.

V. canina, *L.* Dog Violet. April to July. Heaths; not common: Bleak Down; St. Helens; Ninham; Shanklin Down.

V. lactea, *Sm.* Smith's Dog Violet. April to June.

Wet heaths; rare: Staplers; Mount Misery; Parkhurst Forest; Beckett's Copse, Freshwater.

Y. tricolor, *L.* Pansy. Heartsease. June to September. Cultivated ground. The variety *arvensis*, which has small yellow flowers, is common; the plant with purple and yellow flowers is rarely met with in the Island.

DROSERACEAE

Drosera rotundifolia, *L.* Sundew. July to September. Moors; not common: Freshwater; Rookley Wilderness; Munsley; Lake; St. Helens; Sandown.

POLYGALACEAE

Polygala vulgaris, *L.* Common Milkwort. May to August. Pastures on chalk, and dry soil; common.

P. oxyptera, *Reich.* Reichenbach's Milkwort. Dry banks; not common: St. Catherine's; Chale; St. Helens.

P. depressa, *Wend.* (*P. serpyllacea*, *Weihe*). June to September. Sandy and heathy ground; common.

FRANKENIACEAE

Frankenia laevis, *L.* Sea Heath. July to September. Seaside banks; rare: Scratchells Bay; salterns at Newtown; St. Helens.

CARYOPHYLLACEAE

Dianthus Armeria, *L.* Deptford Pink. June to August. Dry banks; rare: it has occurred very sparingly near Binstead; Alverstone, near Brading; Ventnor.

D. prolifer, *L.* Proliferous Pink. June to October. Sandy ground by the sea; rare; probably extinct: formerly on the Dover at Ryde.

D. deltoides, *L.*

Once observed growing in ground which had been cultivated at the Hermitage.

Saponaria officinalis, *L.* Soapwort. June to August. An escape from gardens in a few places.

Silene Cucubalis, *Wibel.* Bladder Champion. June to August. Dry banks, and borders of fields; not uncommon.

S. maritima, *With.* White Sea Campion. June to September. Seaside banks; not very common: Alum Bay; Newtown; near Cowes; King's Quay; St. Helens; Brading Harbour; Niton.

S. anglica, *L.* English Catchfly. June to October. Sandy and gravelly fields; not uncommon: Freshwater; Gurnard; Newport; Quarr; Atherfield; Shanklin; Sandown.

S. gallica, *L.* French Catchfly. June to August. Similar localities, but rarely: Colwell; Kite Hill, Wootton; Newchurch; Shanklin; Newport.

S. nutans, *L.* Nottingham Catchfly. May to August. Banks by the sea; rare: St. Lawrence; Sandown.

S. noctiflora, *L.* Night-flowering Catchfly. June to September. Cultivated fields; very rare: near Arreton Manor, but only once found there.

Lychnis vespertina, *Sibth.* (*L. alba*, *Mil.*). White Campion. May to September. Cultivated and waste ground; common.

L. diurna, *Sibth.* (*L. dioica*, *L.*). Red Campion. April to Sept. Shady banks; common.

L. Flos-cuculi, *L.* Ragged Robin. May to September. Wet meadows; not uncommon.

L. Githago, *Scop.* Corn Cockle. June to September. Cultivated fields; not uncommon.

Cerastium quaternellum, *Fenzl.* (*Moenchia erecta*, *Gaertn.*). Upright Chickweed. May to July. Dry waste ground; not common: St. George's Down; Bleak Down; Afton Down; St. Helens; Sandown.

C. tetrandrum, *Curt.* Dark-green Mouse-ear Ch. April to July. Dry waste ground; not uncommon: Freshwater; Arreton Down; Bembridge; &c.

C. pumilum, *Curt.* Curtis's Mouse-ear Ch. April to July. Chalk downs; rare: Afton Down; Blackgang; Arreton Down; Brading; Bembridge.

C. semi-decandrum, *L.* Little Mouse-ear Ch. April to June. Dry ground; not very common: Totland; St. Helens; Red Cliff. Probably overlooked in other localities.

C. glomeratum, *Thuil.* (*C. viscosum*, *L.*). Broad-leaved Mouse-ear Ch. April to September. Waste ground; common.

C. triviale, *Link* (*C. vulgatum*, *L.*). Narrow-leaved Mouse-ear Ch. May to September. Pastures and waste ground; common.

Var. holosteoides, *Fries*: Shanklin Down; Bembridge Down.

Stellaria aquatica, *Scop.* (*Myosoton aquaticum*, *Moench*). Water Chickweed. July to October. Wet meadows; not common: between Shide and Blackwater; Godshill; Bagwich; between Stickworth and Sandown; Whitwell.

S. media, *With.* Common Chickweed. All the year. Cultivated and waste ground; very common.

Var. Boraeana: Alum Bay; Niton; St. Helens; Sandown.

Var. neglecta: Common.

S. umbrosa, *Opiz.* (*S. neglecta*, *Weihe*). Large-flowered Ch. May to August. Damp and shady places: Marvel Copse; Apse; Shanklin; Combley.

S. Holostea, *L.* Greater Stitchwort. Milkmaids. April to July. Hedges; very common.

S. graminea, *L.* Lesser Stitchwort. May to July. Pastures and bushy places; common.

S. uliginosa, *Murr.* Bog Stitchwort. May to August. Wet pastures; common: Rookley Moors, &c.

Arenaria trinervia, *L.* Three-ribbed Sandwort. April to July. Moist sandy banks; common.

A. serpyllifolia, *L.* Thyme-leaved Sandwort. June to October. Cultivated and waste ground; common.

Var. sphaerocarpa, *Tenore*: Frequent on walls.

Var. glutinosa, *Koch*: St. Helens Spit.

Var. Lloydii, *Jord.*: St. Helens Spit.

A. leptoclados, *Guss.* Gussone's Sandwort. June to October. Cultivated ground, and walls; common.

A. peploides, *L.* (*Honkenya peploides*, *Ehrh.*). Sea Chickweed. June to September. Sandy shores; not very common: Yarmouth; Newtown; Ryde; St. Helens; Sandown; Niton.

Sagina maritima, *G. Don.* Sea Pearlwort. May to August. Seaside waste ground; not very common: Freshwater; Newtown; Gurnard; Cowes; Fishbourne; St. Helens.

S. apetala, *Ard.* Small-flowered Pearlwort. May to August. Dry waste ground; common.

S. ciliata, *Fries.* Fries's Pearlwort. April to July. Similar localities; not uncommon.

S. procumbens, *L.* Procumbent Pearlwort. April to September. Waste ground; common.

S. subulata, *Presl.* Awl-leaved Pearlwort. May to August. Heaths and dry pastures; not common: Headon Hill; St. George's Down; Bleak Down; Shanklin.

S. nodosa, *Fenzl.* Knotted Pearlwort. June to August. Damp sandy or gravelly wastes; not common: Freshwater; Norton; Compton; St. Helens.

Spergula arvensis, *L.* Corn Spurrey. May to August. Cultivated and waste ground; common.

Spergularia rubra, *Fenzl.* (*Alsine rubra*, *Crantz*). Field Sand Spurrey. May to September. Dry sandy or gravelly ground; not uncommon: Freshwater; Brighstone; Bleak Down; Bonchurch; Sandown; St. Helens.

S. neglecta, *Syme.* Lesser Sea Sand Spurrey. May to August. Seaside wastes; common.

S. marginata, *Syme.* Greater Sea S.S. May to August. Salt marshes; common.

S. rupestris, *Syme* (*Alsine rupicola*, *Hiern*). Rock Sea Spurrey. May to August. Seaside cliffs and wastes; common: cliffs from Freshwater to Bembridge, &c.

PARONYCHIACEAE

Scleranthus annuus, *L.* Knawel. June to September. Cultivated and waste ground; common.

PORTULACAEAE

Montia fontana, *L.* Water Blinks. April to September. Ditches and wet places; not very common: near Newport; Sandown, &c.

HYPERICACEAE

Hypericum Androsaemum, *L.* Tutsan. June to August. Woods and bushy ground; not very common: Shalfleet; Wootton; Ryde; Long Lane; and other places.

H. calycinum, *L.* Rose of Sharon. June to August. Naturalized in shady places: Binstead; Bembridge; Yaverland.

H. perforatum, *L.* Dotted-leaved St. John's Wort. June to Sept. Hedges and bushy wastes; common.

H. tetrapterum, *Fries* (*H. quadrangulum*, *L.*). Square-stemmed St. John's Wort. June to September. Wet meadows and wastes; common: Freshwater; Whitcombe; &c.

H. humifusum, *L.* Trailing St. John's Wort. May to August. Heaths and dry banks; not common: Colwell; Cowes; Parkhurst; Staplers; Bleak Down; Wootton.

H. pulchrum, *L.* Upright St. John's Wort. June to August. Heaths and bushy places; common.

H. hirsutum, *L.* Hairy St. John's Wort. June to August. Hedges and thickets, mostly on the Chalk; abundant.

H. montanum, *L.* Mountain St. John's Wort. June to August. Bushy places; rare: sparingly about Steephill.

H. elodes, *L.* Marsh St. John's Wort. June to August. Boggy ground and ditches; not common: Rookley Wilderness; Godshell; Lake Common; St. Helens.

MALVACEAE

Althaea officinalis, *L.* Marsh Mallow. June to September.

Salt marshes and banks of estuaries; not common: Freshwater; Yarmouth; Newtown; Gurnard; Medina between Cowes and Newport; King's Quay; Fishbourne; Brading Harbour; St. Helens.

Malva moschata, *L.* Musk Mallow. May to August.

Borders of fields; sparingly in many places: Rookley Moors; near Newport; &c.

M. sylvestris, *L.* Common Mallow. May to September.

Waste places; common.

M. rotundifolia, *L.* Dwarf Mallow. May to October.

Similar localities, but less common: Freshwater; Arreton; &c.

TILIACEAE

Tilia intermedia, *DC.* Common Lime. June to August.

Hedges and thickets; not common, and probably planted.

T. parvifolia, *Ehrh.* (*T. cordata*, *Mil.*). Small-leaved Lime. June to August. Woods; rare, and doubtfully wild: Tapnel.

LINACEAE

Radiola Millegrana, *Sm.* (Millegrana Radiola, *Druce*). Allseed. June to August. Heaths; rare: Colwell; Bleak Down; Blackpan.

Linum catharticum, *L.* Purging Flax. May to September.

Dry pastures; common, especially on chalk.

L. angustifolium, *Huds.* Narrow-leaved Flax. May to Sept.

Dry pastures; frequent: west bank of Medina below Newport; &c.

L. usitatissimum, *L.* Common Flax. June to September.

Cultivated ground as a casual only; not frequent: Pan, near Newport; Shanklin; Kennerley; Bembridge.

GERANIACEAE

Geranium pratense, *L.* Blue Meadow Crane's-bill. May to August. Meadows; rare and scarcely naturalized: between Alverstone and Knighton; Sandown.

G. striatum, *L.* (*G. versicolor*, *L.*). Veined Geranium. May to July. Naturalized in King's Quay Copse; hedge near Wootton Bridge; St. Lawrence.

G. pyrenaicum, *Burm.* Mountain Geranium. May to July.

Naturalized in hedge-bank near Merston; on the railway between Newport and Cowes; Bembridge.

G. molle, *L.* Dove's-foot Crane's-bill. May to August.

Banks and wastes; common.

G. pusillum, *L.* Small-flowered Crane's-bill. May to August. Sandy banks and wastes; not common: Freshwater; Bridgecourt; Shanklin; Alverstone and Newchurch; Sandown; Yaverland; Steephill.

G. rotundifolium, *L.* Round-leaved Geranium. May to July. Dry thickets; rare: St. Lawrence; Steephill.

G. dissectum, *L.* Cut-leaved Geranium. May to September. Borders of fields and wastes; common.

G. columbinum, *L.* Long-stalked Geranium. May to September. Borders of fields and wastes; not common: Apes Down valley; downs near St. George's Down; Ashy Down and Nunwell; St. Lawrence; Shanklin; Bembridge.

G. lucidum, *L.* Shining Geranium. April to July. Dry banks; rare: between Calbourne and Newbarn; between Shorwell and Rowborough; Undercliff from Blackgang to Luccombe; Niton.

G. Robertianum, *L.* Herb Robert. April to September. Hedges; very common.

Erodium cicutarium, *L'Hérit.* Com. Stork's-bill. May to Sept. Dry banks; common.

E. moschatum, *L'Hérit.* Musk Stork's-bill. May to July. Wastes: Yarmouth (1846), but not seen of late years; St. Helens Green (1860); probably an escape.

E. maritimum, *L'Hérit.* Sea Stork's-bill. May to September. Banks and wastes near the sea; rare: Alum Bay; Brook.

Oxalis Acetosella, *L.* Wood-sorrel. April to June. Woods and shady places; not common: Pan, near Newport; East Standen; Apse; Quarr; Shanklin.

AQUIFOLIACEAE

Ilex Aquifolium, *L.* Holly. (Christmas, Wight.) April to July. Woods; common.

CELASTRACEAE

Euonymus europaeus, *L.* Spindle-tree. April to July. Woods and bushy places; not uncommon.

RHAMNACEAE

Rhamnus catharticus, *L.* Purging Buckthorn. April to July. Woods: Yarmouth; Thorley; Calbourne; Rowborough; Gatcombe; Arreton; Ashy.

R. Frangula, *L.* Alder Buckthorn. April to September.
Damp woods; not common: Marvel Copse; King's Quay; in
copses north of the Chalk; Bordwood; &c.

R. Alaternus. One bush of many years' growth in a hedge on
Pan Down.

ACERACEAE

Acer Pseudo-platanus, *L.* Sycamore. April to July.
Woods; common; naturalized and self-sown.

A. campestre, *L.* Maple. April to July.
Hedges and woods; common.

LEGUMINOSAE

Ulex europaeus, *L.* Furze. Gorse. March to June.
Downs and heaths; very common.

U. Gallii, *Planch.* Planchon's Furze. July to October.
Similar situations; not uncommon.

U. nanus, *Forst.* (*U. minor*, *Roth*). Dwarf Furze. Aug. to Oct.
Similar situations; common.

Genista anglica, *L.* Petty Whin. April to August.
Heaths and rough pastures; not uncommon: Freshwater; Park-
hurst; Rookley; Godshill; &c.

G. tinctoria, *L.* Dyer's Greenweed. June to September.
Rough pastures, and heaths: frequent near Newport; &c.

Cytisus scoparius, *Link* (*Sarothamnus scoparius*, *Wimm.*).
Broom. April to July. Copses and bushy pastures; not uncommon:
near Newport; Shanklin; &c.

Ononis repens, *L.* Rest-harrow. May to September.
Borders of fields; common.

Anthyllis Vulneraria, *L.* Kidney Vetch. May to September.
Pastures; mostly on chalk; common.

Medicago sativa, *L.* Lucerne. May to August.
Cultivated ground; hardly naturalized.

M. lupulina, *L.* Black Medick. April to September.
Pastures and wastes; common.

M. denticulata, *Willd.* Reticulated Medick. April to July.
Sandy wastes by the sea; not common: Quarr; Reeth Bay;
Sandown; Brading; St. Helens.

M. maculata, *Sibth.* (*M. arabica*, *Huds.*). Spotted M. Apr. to Sept.
Pastures and wastes; not uncommon.

Melilotus officinalis, *Lam.* (*M. altissima*, *Thuill.*). Common
Melilot. May to September. Borders of fields; not common:
Yarmouth; Shalfleet; Gurnard; Ventnor; Bembridge; &c.

M. alba, *Lam.* White Melilot. May to September.
Sandy ground; rare: Rowborough; Whippingham; Kingston;
Ventnor; Luccombe.

M. arvensis, *Wallr.* Field Melilot. June to September.
Borders of cultivated fields; not common: Freshwater; St.
Lawrence; Bembridge.

Trigonella ornithopodioides, *DC.* Bird's-foot Trefoil. May
to August. Gravelly and sandy wastes; rare: Totland; Sandown;
St. Helens; Bembridge.

Trifolium subterraneum, *L.* Subterranean Trefoil. April to
July. Heaths; not common: Gurnard; Sea View; Chale;
Newchurch; Sandown; Steephill; St. Helens; Whippingham.

T. pratense, *L.* Red Clover. April to September.
Pastures and wastes; very common.

T. medium, *L.* Zigzag Clover. May to September.
Dry pastures; not unfrequent: Parkhurst; &c.

T. maritimum, *Huds.* (*T. squamosum*, *L.*). Teasel-headed Trefoil.
May to September. Waste ground near the sea; rare: between
Thorley and Yarmouth; near Newtown Bridge.

T. incarnatum, *L.* Trifolium. May to August.
Borders of fields; an escape only.

T. arvense, *L.* Hare's-foot Trefoil. May to August.
Sandy wastes; not common: East Cowes; Knighton; St. Helens;
Sandown.

T. striatum, *L.* Soft-knotted Trefoil. April to July.
Sandy wastes; not common: Totland; King's Quay; Shorwell;
Niton; Horringford; Sandown; St. Helens.

T. scabrum, *L.* Rough Trefoil. May to July.
Sandy wastes; rare: Freshwater; Norton; and other places near
the sea.

T. glomeratum, *L.* Round-headed Trefoil. May to July.
Sandy wastes; not common: Freshwater; Shorwell; Blackgang;
Undercliff; Horringford; Sandown; St. Helens.

T. suffocatum, *L.* Dense-flowered Trefoil. May to July.
Sandy wastes; rare: St. Helens Spit.

T. hybridum, *L.* Alsike Clover. June to September.
Naturalized from cultivation.

T. repens, *L.* White or Dutch Clover. April to September.
Meadows and wastes; very common.

T. fragiferum, *L.* Strawberry-headed Trefoil. May to Sept.
Damp meadows and wastes; common.

T. procumbens, *L.* Hop Trefoil. May to August.
Dry pastures and wastes; common.

T. minus, *Sm.* (*T. dubium*, *Sibth.*). Lesser Trefoil. May to July.
Dry pastures and wastes; common.

T. filiforme, *L.* Least Trefoil. April to July.
Sandy wastes; frequent: Colwell; Wilderness; St. Helens; &c.

T. patens, *Schreb.* A casual: has been twice noticed in clover fields near Thorley.

Lotus corniculatus, *L.* Bird's-foot Lotus. May to September. Pastures and wastes; very common.

Var. villosus, *Seringe*: wood between Yarmouth and Thorley; Thorness; Quarr.

L. tenuis, *Kit.* Slender Lotus. May to September. Damp pastures and wastes; not common: Yarmouth; Thorley; Thorness; Apes Down; Brighstone; below cliffs between Sandown and Shanklin; Bembridge; near Whitefield wood.

L. major, *Scop.* (*L. uliginosus*, *Schk.*). Marsh Lotus. June to Sept. Wet pastures and woods; common.

Astragalus glycyphyllos, *L.* Sweet Milk Vetch. May to Sept. Rough bushy places; rare: The Undercliff from St. Catherine's Point to Steephill.

Ornithopus perpusillus, *L.* Bird's-foot. May to August. Sandy and gravelly wastes; frequent: Freshwater; St George's Down; St. Helens; &c.

Hippocrepis comosa, *L.* Horseshoe Vetch. May to August. Dry pastures and wastes; frequent, especially on the Chalk: Pan Down, &c.

Onobrychis sativa, *Lam.* (*O. viciaefolia*, *Scop.*). Sainfoin. May to September. Chalk downs and dry ground; often the remains of cultivation.

Vicia hirsuta, *Koch.* Hairy Tare. May to September. Borders of arable fields; not very common: near Newport; Wootton; Undercliff; &c.

V. tetrasperma, *Moench.* Smooth Tare. May to September. Borders of fields; frequent: near Newport; Wootton; St Helens; &c.

V. gracilis, *Lois.* Slender Tare. May to September. Borders of fields; not unfrequent: Thorley; Cowes; Staplers; Bembridge; &c.

V. Cracca, *L.* Tufted Vetch. June to September. Woods and rough meadows; common.

V. bithynica, *L.* July and August. Rough ground; very rare: Gurnard (found by Mr. J. F. Rayner in 1907).

V. sylvatica, *L.* Wood Vetch. May to August. Woods; rare: Luccombe Copse; Yaverland.

V. sepium, *L.* Bush Vetch. April to July. Hedges and woods; common.

V. sativa, *L.* (*V. angustifolia*, *L.*). Cultivated Vetch. May to August. Borders of fields and wastes; common.

V. angustifolia, *Roth.* Com. Wild Vetch. April to July. Grassy banks; common.

Var. Bobartii, *Forst.*: Newchurch; Ventnor; St. Helens.

V. lathyroides, *L.* Spring Vetch. April to June.

Dry grassy wastes; very rare: Red Cliff, Sandown.

V. lutea, *L.* Was once (1860) gathered on waste ground near Sandown.

V. hybrida, *L.* Was observed in 1888 in a field of sainfoin in the Undercliff.

Lathyrus Nissolia, *L.* Grass Vetch. April to July.

Banks and waste places; not very common: Thorley; near Newport; Sandown; Gurnard; Bembridge; &c.

L. pratensis, *L.* Meadow Vetchling. May to August.

Hedges and pastures; common.

L. sylvestris, *L.* Everlasting Pea. June to September.

Woods; rare: Kerne; Puckaster; Appuldurcombe; Luccombe; Shanklin; Sandown; East Cowes.

L. palustris, *L.* Marsh Vetchling. May to August.

Boggy places; very rare: Golden Hill, Freshwater.

L. maritimus, *Bigel.* Sea Pea. June to September.

Sea beaches; very rare: Norris Castle; Sandown; but not noticed for many years.

L. hirsutus, *L.* Was once gathered in a cornfield near Brighstone many years ago and has not since been recorded.

L. macrorrhizus, *Wim.* (*L. montanus*, *Bernh.*). Tuberous Vetch.

April to June. Woods; not uncommon: Thorness; Cowes; between Whippingham and Wootton; Briddlesford; Quarr; Apley; Bordwood; Niton.

Var. tenuifolius, *Bab.*: Nunwood, near Shalfleet; Bordwood.

Astragalus hypoglottis, *L.*

Recorded as having been found on "Carisbrooke Castle Hill," and on "Dover Spit" (Ryde). Possibly an error.

ROSACEAE

Prunus spinosa, *L.* Sloe. Blackthorn. April to June.

Hedges and thickets; very common.

P. insititia, *L.* Bullace. April to June.

Hedges and thickets; not uncommon: near Newport, and elsewhere.

P. Avium, *L.* Wild Cherry. Merry. April to June.

Woods; frequent.

P. Cerasus, *L.* Morello Cherry. April to June.

Woods and hedges; not uncommon.

Spiraea Ulmaria, *L.* Meadow Sweet. May to September.

Wet meadows; common.

S. Filipendula, *L.* Dropwort. May to August.

Pastures and thickets on chalk; rare: Freshwater; Westover; Steephill.

Agrimonia Eupatoria, *L.* Common Agrimony. May to August. Borders of fields and on waste ground; common.

A. odorata, *Mill.* Fragrant Agrimony. May to September. Thickets and wastes; not common: Briddlesford; Merston; Bagwich; Niton; Bordwood; Merry Gardens; Yaverland.

Poterium Sanguisorba, *L.* Salad Burnet. May to August. Dry banks, mostly on chalk; common.

P. muricatum, *Spach* (*P. polygamum*, *Waldst. & K.*). June to August. Cultivated fields, mostly on chalk; rare: south of Ningwood; Bowcombe Down; Ashey Down; Niton; Steephill; Shanklin; Bembridge.

Alchemilla arvensis, *Scop.* Parsley Piert. May to October. Cultivated and waste ground; common.

A. vulgaris, *L.* Lady's Mantle. June to September. A single patch in the grounds of Tyne Hall, Bembridge; doubtless introduced.

Potentilla Fragariastrum, *Ehrh.* (*P. sterilis*, *Garcke*). Barren Strawberry. March to June. Hedges and banks; common.

P. Tormentilla, *Scop.* (*P. sylvestris*, *Nec.*). Tormentil. May to September. Dry banks; common.

P. procumbens, *Sibth.* May to September. Woods and banks; frequent: Parkhurst Forest; Aldermoor, near Ryde.

P. reptans, *L.* Creeping Cinquefoil. May to September. Banks; common.

P. Anserina, *L.* Silverweed. May to September. Moist wastes; common.

P. Comarum, *Nestl.* (*Comarum palustre*, *L.*). Marsh Cinquefoil. May to July. Boggy ground; not common: Freshwater; Wilderness; Moortown; Sainham; Sandown Level.

Fragaria vesca, *L.* Strawberry. May to July. Woods and banks; common.

Out of the 170 Brambles (species, sub-species, and varieties) described in his "Handbook of British Rubi" by the Rev. William Moyle Rogers, published in 1900, 70 species are enumerated by Mr. Townsend as occurring in Hampshire; and of these 70, the Isle of Wight appears to possess 39, though probably others will be found to occur.

Rubus Idaeus, *L.* Raspberry. May to July. Damp woods and thickets; not uncommon: Blackwater Moor; Wilderness, &c.

R. suberectus, *Anders.* Bramble. May to July. Wet woods: Freshwater; Ningwood; Parkhurst; Wilderness; Apse; America Wood.

R. Rogersii, *Linton.* June and July. Heaths: Hide, near Shanklin.

- R. plicatus**, *Wh. & N.* June to August.
Wet heaths: Freshwater; Ningwood; Wilderness; Niton; Shanklin.
- R. nitidus**, *Wh. & N.*, *var. hamulosus*, *P. J. Muell.* July to Sept.
The Wilderness.
- R. affinis**, *Wh. & N.* June to September.
Freshwater: Colwell; Yarmouth; Parkhurst; Bleakdown; Niton.
- R. Lindleianus**, *Lees.* July and August.
Hedges and thickets; frequent.
- R. rhamnifolius**, *Wh. & N.* July and August.
Hedges and thickets; common.
- R. Scheutzii**, *Lindeb.* July and August.
Parkhurst Forest.
- R. dumnoniensis**, *Bab.* July and August.
Freshwater; Headon.
- R. pulcherrimus**, *Neuman.* July and August.
Totland; Colwell; Parkhurst Forest; Bonchurch; Sandown; Bleak Down.
- R. villicaulis**, *Koehl., sub-sp. Selmeri, Lindeb.* July and August.
Colwell; Brighstone; Kingston; Horryngford; Newchurch; Apse; Shanklin.
- R. leucandrus**, *Focke.* July to September.
Parkhurst Forest.
- R. thyrsoideus**, *Wimm.* June to September.
Totland; Colwell.
- R. argentatus**, *P. J. Muell.* July and August.
Bushy places: Freshwater; Shanklin; Sandown.
Var. robustus, *P. J. Muell.*: Apse Castle Wood.
- R. rusticanus**, *Merc.* July and August.
Hedges and bushy places; very common.
- R. lentiginosus**, *Lees.* June to August.
Bushy places: Parkhurst Forest.
- R. macrophyllus**, *Wh. & N.* July and August.
Hedges and bushy places: Westover; Idlecombe; Parkhurst Forest; Wilderness; Apse; Landslip.
Sub-sp. Schlechtendalii, Weihe: Apse; Marvel Copse.
- R. Salteri**, *Bab.* July and August.
Apse Castle Wood.
- R. Sprengelii**, *Weihe.* July and August.
Woods, heaths, and bushy places: Parkhurst Forest; Newport; Bleak Down; Apse Castle Wood; Niton.
- R. micans**, *Gren. & Godr.* July and August.
Colwell Heath.
- R. hirtifolius**, *Muell. & Wirt.* (The type does not appear to occur.) July and August.
Var. danicus, *Focke:* Apse Castle Wood.
Var. mollissimus, *Rogers:* Bleak Down; Parkhurst Forest.
- R. leucostachys**, *Schleich.* July and August.

Hedges and bushy places; very common.

R. lasiocladus, *Focke*, var. **angustifolius**, *Rogers*. July and August. Hedges and bushy places: Bleak Down; Parkhurst Forest.

R. mucronatus, *Blox.*, var. **nudicaulis**, *Rogers*. July and August. Bushy places: Marvel Copse.

R. Borreri, *Bell Salter*. June to August.

Hedges and commons: Wilderness; Niton; Shanklin; Apse Castle Wood.

R. radula, *Weihe*, sub-sp. **anglicanus**, *Rogers*. July and August. Heaths and thickets: Parkhurst Forest; St. John's, Ryde.

R. echinatus, *Lindl.* July and August.

Hedges and thickets; common.

R. Babingtonii, *Bell Salter*. July and August.

Bushy places: Wootton.

R. Lejeunii, *Weihe*, sub-sp. **ericetorum**, *Lefv.* July and August. Thickets: between Guildford and Lynn.

R. Bloxamii, *Lees*. July and August.

Thickets: Colwell; Parkhurst Forest.

R. fuscus, *Wh. & N.*, var. **nutans**, *Rogers*. July and August. Parkhurst Forest.

R. foliosus, *Wh. & N.* July and August.

Woods and bushy places: Parkhurst Forest; Marvel Copse; Bleak Down.

R. rosaceus, *Wh. & N.* July and August.

Woods and bushy places: Beckett's Copse, Freshwater; hedge west of Newport; Guildford.

Var. **hystrix**, *Wh. & N.*: Quarr Wood; St. John's, east of Ryde.

Sub-sp. **infecundus**, *Rogers*: Staplers.

R. Koehleri, *Wh. & N.* July and August.

Hedges and thickets: Quarr Wood; Culver cliffs.

R. dumetorum, *Wh. & N.* July and August.

Hedges; common.

Var. **ferox**, *Weihe*: Colwell; Newport; Bleak Down; Quarr; Apse Castle.

Var. **diversifolius**, *Lindl.*: Beckett's Copse; Newport; Wilderness; Cockleton; Whitwell; Brading Down.

Var. **tuberculatus**, *Bab.*: Colwell; Shalfleet; Westover; Parkhurst; Shanklin Down; Niton; Undercliff.

Var. **pilosus**, *Wh. & N.*: Freshwater.

Var. **concinus**, *Warren*: Freshwater.

Var. **fasciculatus**, *P. J. Muell.*: Niton Undercliff.

R. corylifolius, *Sm.* June to August.

Hedges and thickets; not uncommon.

Var. **cyclophyllus**, *Lindeb.*: not uncommon.

R. Balfourianus, *Blox.* July and August.

Hedges: Undercliff west of Ventnor; Brading.

R. caesius, *L.* Dewberry. June to September.

Woods and bushy places; not uncommon: Apes Down; Bowcombe; Brading; &c.

Geum urbanum, *L.* Wood Avens. May to August.
Damp hedges; common.

The number of British Roses enumerated as species by the 10th edition of the "London Catalogue of British Plants (1908)" is 25, but the named sub-species or varieties run up to 103. Mr. Townsend gives 12 species as occurring in Hants and 10 of these are found in the Isle of Wight. Of the sub-species and varieties no census can be given.

Rosa pimpinellifolia, *L.* (*R. spinosissima*, *L.*). Burnet Rose. May to July. Heath and downs; common.

R. coronata, *Crepin.* A hybrid: *R. spinosissima* × *tomentosa*, has been found in the Island, but the locality is not known.

R. mollis, *Sm.* June and July.
Hedges: copse near Ryde; between Newport and Niton.

R. tomentosa, *Sm.* Hedges; frequent.

R. rubiginosa, *L.* Sweetbriar. May and June.
Hedges and bushy places: Freshwater; Westover; St. George's Down; St. Lawrence; Bonchurch; Bembridge.

R. micrantha, *Sm.* June to August.
Bushy places: Westover plantation; Hampstead; Shorwell; Undercliff; Shanklin; Bembridge.

R. obtusifolia, *Desv.* June to August.
Bushy places: Landslip, Luccombe.

R. tomentella, *Leman.* (? a variety of *Rosa Borreri*, *Woods.*) June to August. Hedges, Freshwater.

R. canina, *L.* Dog Rose. June to August.
Hedges and thickets; very common.

Var. lutetiana: Little Pan; Blackgang; Undercliff; Brading.

Var. dumalis: common.

Var. biserrata: Undercliff.

Var. urbica: Niton; Brading.

Var. arvatica: Niton; Whitwell.

Var. andegavensis: Freshwater; Calbourne; Little Pan.

Var. verticillacantha: Thorness; Niton.

R. systyla, *Bast.* (? a variety of *R. stylosa*, *Desv.*) June and July. Hedges and thickets: Newtown; Carisbrooke; Rookley; Oakfield, near Ryde; Niton; Undercliff; Haven Street; Bembridge.

R. arvensis, *Huds.* June and July.
Hedges and thickets; common.

Crataegus Oxyacantha, *L.* Hawthorn. May and June.
Hedges and bushy places; very common. The var. *C. monogyna*, *Jacq.* is the only form found in the Island.

Pyrus torminalis, *Ehrh.* Service-tree. May and June.
Woods: Ningwood; Fairlee; woods between Whippingham and Ryde; Bordwood.

P. Aria, *Ehrh.* White-beam. Whip-crop. May and June.
Woods; rather common: Rookley; Shanklin; &c.

P. scandica, *Syme.* May and June.
Carisbrooke Castle; probably planted.

P. semipinnata, *Roth.* May and June.
Carisbrooke Castle; probably planted.

P. Aucuparia, *Ehrh.* Mountain Ash. May and June.
Woods; naturalized: Parkhurst; Fernhill; Luccombe; America Wood; Apse Castle.

P. communis, *L.* Pear. April and May.
Woods and hedges; rare; doubtfully wild: Heathfields; Whippingham; near East Medina Mill; &c.

Var. Achras: one tree by roadside between Ryde and Asheys.

P. Malus, *L.* Crab-apple. May.
Hedges and copses; not uncommon: near Newport; King's Quay; &c.

Var. acerba, is the true crab-apple.

Var. mitis, is the cultivated apple escaped.

LYTHRACEAE

Lythrum Salicaria, *L.* Purple Loosestrife. July to September.
Wet places and margins of streams; not uncommon: Medina Valley; &c.

L. Hyssopifolium, *L.*

Once gathered many years ago in Pan Moor, Newport.

Peplis Portula, *L.* Water Purslane. July to September.
Wet places; frequent: Freshwater; Rookley; St. George's Down; Ninham; Godshill; Sandown.

ONAGRACEAE

Epilobium angustifolium, *L.* Rose-bay. July to September.
Wet thickets; frequent: Blackwater; Rookley; between Ryde and Brading; Niton; Landslip; Lake; Perreton; Alverstone; Lynch.

E. hirsutum, *L.* Great Hairy Willow-herb. Codlings and Cream. June to September. Sides of ditches and streams; common.

E. parviflorum, *Schreb.* Small-flowered H. W.-h. June to Sept.
Similar localities; common.

E. montanum, *L.* Broad-leaved W.-h. June to August.
Hedges and woods; common.

E. tetragonum, *L.* Long-podded Square-stalked W.-h. June to August. Damp places; common.

E. obscurum, *Schreb.* Short-podded Square-stalked W.-h. June to August. Wet ground; frequent: Yarmouth; Wilderness; Pan Common; Chale; Niton; Newchurch; Shanklin.

E. palustre, *L.* Marsh W.-h. June to August. Wet ground; frequent: Freshwater; Shalfleet; Wilderness; Bartlett's Green, near Barnsley Farm; Brighstone; Blackpan; Apse; St. Helens.

Oenothera biennis, *L.* Evening Primrose. July to September. Waste ground; as an escape occasionally.

Oe. odorata, *Jacq.* June. St. Helens Spit; sown there in 1858 by Mr. A. G. More.

Circaea lutetiana, *L.* Enchanter's Nightshade. June to Aug. Woods and shady places; rather common.

HALORAGACEAE

Myriophyllum spicatum, *L.* Spiked Water Milfoil. May to September. Streams; rather rare: Colwell; Sandown; Alverstone; Brading Harbour; Yarbridge.

M. alterniflorum, *DC.* Alternate-flowered W.M. May to Aug. Similar localities; rather rare: Freshwater; near Emsworth; Rowledge; Lashmere pond; Lake Common; Sandown; St. Helens.

Hippuris vulgaris, *L.* Mare's-tail. May to July. Streams; very rare: Brading Marshes.

Callitriche verna, *L.* Com. Water Starwort. April to Sept. Pools and streams; common.

C. obtusangula, *Le Gall.* Blunt-fruited W.S. May to Sept. Pools and streams; rather rare: Freshwater; Medina below the Wilderness; Yafford; Brading; Sandown.

C. stagnalis, *Scop.* Large-fruited W.S. May to September. Ponds and ditches; common.

C. hamulata, *Kuetz.* Hooked W.S. June to September. Ponds; not common: Staplers; Knighton; Rew Street; Bleak Down; Carisbrooke; Godshill.

CUCURBITACEAE

Bryonia dioica, *Jacq.* Bryony. May to September. Hedges and woods; common: near Newport; &c.

CRASSULACEAE

Sedum Telephium, *L.* Orpine. July to September. Hedges and waste land; not common: Freshwater; Ashey; Godshill.

- S. album**, *L.* White Stone-crop. July to September.
Walls and roofs; rare: Yarmouth; Carisbrooke.
- S. dasphyllum**, *L.* Thick-leaved Stone-crop. June to Aug.
Walls and roofs; rare: Brading; Alverstoke; Lake.
- S. anglicum**, *Huds.* English Stone-crop. June to August.
Walls and dry banks; not common: Alum Bay; Shorwell;
St. Catherine's; Brighstone Down; Sandown; St. Helens Spit.
- S. acre**, *L.* Wall-pepper. June to August.
Walls, roofs, and dry banks; rather common: Newport; &c.
- S. reflexum**, *L.* Sengreen. Yellow Stone-crop. July to Sept.
Similar localities; rare; but probably not native.
- Sempervivum tectorum**, *L.* House-leek. July to September.
Walls and roofs; frequent; not native.
- Cotyledon Umbilicus**, *L.* Navelwort. June to September.
Dry banks; rare: Bohemia, and thence towards Bleak Down;
Kennerley.

SAXIFRAGACEAE

- Saxifraga tridactylites**, *L.* Rue-leaved Saxifrage. Apr. to June.
Walls, roofs, and dry banks; rare: Shorwell; Gatecombe; Carisbrooke; Newport; Pan Down; Godshill; Gurnard; Quarr.
- Chrysosplenium oppositifolium**, *L.* Golden S. Mar. to June.
Sides of streams: Spring Lane, Carisbrooke (the only locality N. of the Chalk range); not unfrequent on the S. of the Chalk.
- Parnassia palustris**, *L.* Grass of Parnassus.
Boggy ground. Formerly (more than 70 years ago) noted as growing near Ryde; also near Arreton; but not seen for very many years.
- Ribes Grossularia**, *L.* Gooseberry. April to June.
Hedges and woods; frequent; in some localities apparently wild, but probably always introduced by birds.
- R. rubrum**, *L.* Red Currant. April to June.
Similar localities; frequent; doubtfully wild.
- R. nigrum**, *L.* Black Currant. April to June.
Wet thickets; less frequent and more probably wild: Symington Copse, near Cowes; Horringford; Sheat.

UMBELLIFERAE

- Hydrocotyle vulgaris**, *L.* Marsh Pennywort. May to August.
Boggy land; not uncommon: Yarmouth; Medina Valley; Sandown; &c.
- Sanicula europaea**, *L.* Wood Sanicle. May to August.
Woods and hedges; common.
- Eryngium maritimum**, *L.* Sea Holly. July and August.

Seashores; not unfrequent on the north, but almost absent from the south shores.

Apium graveolens, *L.* Celery. June to August.

Salt marshes and sides of streams; frequent.

Helosciadium nodiflorum, *Reich. fil.* (*Apium nodiflorum*, *Reich. fil.*). Procumbent Marshwort. July to October. Streams and wet places; common.

Var. ochreatum, *DC.*: Colwell Heath; St. Helens Green.

H. inundatum, *Reich.* (*Apium inundatum*, *Reich. fil.*). Least Marshwort. June to August. Streams and pools; not common: Goldens, Freshwater; Thorness; near Newtown; Wilderness; and Lashmere pond.

Carum Petroselinum, *Benth.* Garden Parsley. July to Sept. Walls and banks; naturalized.

C. segetum, *Benth.* Corn Parsley. July to September. Borders of fields and on waste ground; common.

Bunium flexuosum, *With.* (*C. majus*). Earth-nut. May to July. Woods and pastures: frequent: Marvel Copse; &c.

Sison Amomum, *L.* Stone Parsley. July to September. Hedge-banks; frequent: Yarmouth; Ningwood; Newtown; Shorwell; Newport; Ryde; Blackgang; Undercliff; Brading; Sandown.

Aegopodium Podagraria, *L.* Gout-weed. June to August. Shady banks; not very common: Freshwater; Marvel Copse; Newchurch; Ventnor; &c.

Pimpinella Saxifraga, *L.* Burnet Saxifrage. July to September. Downs and pastures; common: Pan Down; &c.

Sium angustifolium, *L.* (*S. erectum*, *Huds.*). Narrow-leaved Water Parsnip. July and August. Ditches and pools: Freshwater; Moortown; Landslip; Apes Down; Ventnor; &c.

Bupleurum rotundifolium, *L.* Hare's-ear. June to August. Cornfields; rare: Colwell (1838); Thorley; Wellow (1840); Tapnell; Calbourne (1845); Yarmouth; Sandown (1848); but not noted as occurring for many years past.

B. tenuissimum, *L.* Slender Hare's-ear. June to September. Grassy banks by the sea or estuaries; not common: Goldens, Freshwater; Yarmouth; Newtown; Gurnard; banks of Medina between Cowes and Newport; Sandown; St. Helens; Brading Harbour; salterns near Sea View.

Oenanthe fistulosa, *L.* Com. Water Dropwort. June to Sept. Ditches; rare: Freshwater; Sandown.

Oe. pimpinelloides, *L.* Parsley W.D. June to September. Meadows; rather common: Yarmouth; Newport; Brading; St. Helens; &c.

Oe. Lachenalii, *Gmel.* Parsley Waterwort. June to September. Brackish marshes; not common: Freshwater; Medina below Newport; Wootton Creek; St. Helens Spit; Brading.

Oe. crocata, *L.* Hemlock Water Dropwort. June to August.
Ditches and wet thickets; common.

Aethusa Cynapium, *L.* Fool's Parsley. July to September.
Cultivated and waste ground; common.

Foeniculum vulgare, *Miller.* Fennel.
Waste ground; probably not native in Wight.

Silaus pratensis, *Bess.* (*S. flavescens, Bernh.*). Pepper Saxifrage.
June to September. Meadows; common, except south of the Chalk.

Crithmum maritimum, *L.* Samphire. June to September.
Cliffs and shores; not uncommon: from the Needles to Bembridge;
and in many places abundant.

Angelica sylvestris, *L.* Angelica. July to September.
Wet woods; not uncommon: between Westmill and Carisbrooke;
Blackwater; &c.

Pastinaca sativa, *L.* Wild Parsnip. June to September.
Hedges and borders of fields, especially on the Chalk; common.

Heracleum Sphondylium, *L.* Hogweed. June to September.
Hedges and borders of fields; common.

Daucus Carota, *L.* Wild Carrot. June to September.
Hedges and borders of fields, especially on the Chalk; common.
Var. maritimus: it is doubtful if the seaside thick-leaved *Daucus*
which grows on the Freshwater cliffs and elsewhere by the sea is
D. gummifer, Allioni.

Caucalis daucoides, *L.* Bur-Parsley. June and July.
A casual in June, 1879, under the walls of St. Helens Mill.

Torilis arvensis, *Link.* Field Hedge-Parsley. June to August.
Cultivated fields and waysides; common.

T. Anthriscus, *Gmel.* Upright Hedge-Parsley. July to Sept.
Hedges and wastes; common.

T. nodosa, *Gaertn.* Knotted Hedge-Parsley. May to August.
Hedges and waysides; less common: Freshwater; Newport;
Sandown; &c.

Chaerophyllum Anthriscus, *Lam.* Chervil. Beaked Parsley.
May to July. Sandy banks and wastes; not very common: Fresh-
water; Shorwell; Ventnor; Nettlestone.

C. sylvestre, *L.* Cow-Parsley. April to July.
Hedges and shady places; common.

C. temulum, *L.* Rough Chervil. May to September.
Hedges and borders of fields; common.

Scandix Pecten-Veneris, *L.* Shepherd's Needle. May to Sept.
Cultivated fields; common.

Conium maculatum, *L.* Hemlock. June to September.
Hedges and wastes; not very common; but it occurs in all the
districts.

Smyrnum Olusatrum, *L.* Alexanders. May and June.
Hedges, wastes, and cliffs; not common: Yarmouth; Carisbrooke;
Ventnor; Gurnard; &c.

ARALIACEAE

Hedera Helix, *L.* Ivy. September to November.
Walls, rocks, and woods; common.

CORNACEAE

Cornus sanguinea, *L.* Dogwood. Cornel. May and June.
Hedges and woods; common.

LORANTHACEAE

Viscum album, *L.* Mistletoe. March to May.
Parasitical on trees, generally on apple-trees in the Island, and possibly introduced.

CAPRIFOLIACEAE

Adoxa Moschatellina, *L.* Moschatel. Gloryless. March to June. Shady banks; frequent: Marvel Copse; Great Pan; &c.

Sambucus nigra, *L.* Common Elder. June and July.
Hedges and woods; common. A variety with yellow-green fruit, corner of Spring Lane, Carisbrooke, and at Newchurch.

S. Ebulus, *L.* Danewort. Ground Elder. July and August.
Fields and wastes; rare: Whippingham; Kerne; Redhill; St. Catherine's Point; Luccombe.

Viburnum Opulus, *L.* Guelder Rose. May and June.
Woods; frequent: Freshwater; Parkhurst; Tolt; Niton; &c.

V. Lantana, *L.* Wayfaring Tree. Mealy Guelder Rose. April to June. Hedges and woods; common.

Lonicera Periclymenum, *L.* Honeysuckle. June to October.
Hedges and woods; common.

RUBIACEAE

Rubia peregrina, *L.* Madder. June and July.
Hedges and woods; frequent: Yarmouth; near Gurnard; Luccombe; East Cowes; the Undercliff.

Galium Cruciatum, *Scop.* Crosswort. Mugwort. April to July.
Hedges and wastes; common.

G. verum, *L.* Yellow Bedstraw. June to September.
Dry pastures and hedges; common.

G. erectum, *Huds.* Narrow-leaved Great B. June to Sept.
Hedges and pastures on the Chalk; rare: recorded somewhat doubtfully as occurring at Freshwater and Bembridge.

G. Mollugo, *L.* Com. Great Bedstraw. July and August.
Hedges and thickets; common.

G. saxatile, *L.* Heath Bedstraw. June to August.
Heaths and banks; common.

G. palustre, *L.* Marsh Bedstraw. June to August.
Marshes; common.

Var. elongatum: Freshwater and Sandown.

Var. Witheringii: Freshwater; Coppid Hall; Blackpan.

G. uliginosum, *L.* Rough Marsh Bedstraw. July and August.
Marshes; frequent: Freshwater; Staplers; Newchurch; &c.

G. Aparine, *L.* Goosegrass. Cleavers. May to September.
Hedges and cultivated ground; common.

G. tricornis, *Stokes.* Corn Bedstraw. June to September.
Arable fields; not common: Thorley and Wellow; Westover; Apes Down; Carisbrooke; near Cowes; near Kerne; Moortown, Brighstone; Niton; Bonchurch; Sandown, near the Culvers.

Asperula odorata, *L.* Woodruff. April to June.
Woods and shady hedges; not common: Thorness; Cowes; woods between Binstead and Fishbourne; East Standen; Sullens Copse; Alvington; Long Lane Copse.

A. cynanchica, *L.* Squinancy-wort. June to August.
Chalk downs; common.

Sherardia arvensis, *L.* Sherardia. April to September.
Cultivated and waste ground; common.

Crucianella stylosa, *DC.*

No doubt an escape from a garden: lane near Carisbrooke, and in the Undercliff.

VALERIANACEAE

Kentranthus ruber, *DC.* Red Valerian. June to September.
Naturalized on walls and cliffs: Yarmouth; Carisbrooke; Brading; Ventnor; Sandown.

Valeriana dioica, *L.* Marsh Valerian. May and June.
Boggy marshes; rare: Freshwater; Thorley; Clatterford; Carisbrooke; Briddlesford.

V. officinalis, *L.* Great Valerian. June and July.
Wet woods and pastures. The var. *sambucifolia*, *Mik.* is the only one observed in the Island; this is not uncommon.

Valerianella olitoria, *Poll.* Lamb's Lettuce. April to June.
Cultivated and waste ground; common.

V. Auricula, *DC.* (*V. rimosa*, *Bast.*). Sharp-fruited L.L. June and July. Similar localities, but more rarely: Freshwater; Cowes; Haven Street; Bembridge; &c.

Y. dentata, *Poll.* Narrow-fruited L.L. June to August.
Similar localities; frequent.

Var. mixta: Ningwood; Medham.

DIPSACEAE

Dipsacus sylvestris, *Huds.* Teasel. July and August.
Hedges and woods; common.

Scabiosa succisa, *L.* Devil's-bit Scabious. August to October.
Heaths and moist pastures; frequent: Freshwater; Apes Down;
Wilderness; Newport; &c.

S. Columbaria, *L.* Small Scabious. June to September.
Dry banks, chiefly on the Chalk; common.

S. arvensis, *L.* (*Knautia arvensis*, *Coul.*). Field S. June to Sept.
Arable fields and waste ground; common.

COMPOSITAE

Onopordum Acanthium, *L.* Scotch Thistle. July to September.
Waste ground: formerly on the Dover at Ryde; a single plant
found in clover at Thorley many years ago.

Silybum Marianum, *Gaertn.* Milk Thistle. May to July.
Dry banks and wastes; naturalized in the Undercliff.

Carduus tenuiflorus, *Curt.* (*C. pycnocephalus*, *L.*). Slender-
flowered Thistle. May to August. Dry wastes, mostly on the
Chalk; rather common.

C. nutans, *L.* Musk Thistle. May to September.
Dry wastes; common.

C. crispus, *L.* Welled Thistle. June to October.
Woods, banks, and wastes: frequent: High Wood, Swainston;
and by the road towards Apes Down; Carisbrooke Castle; near
Cowes; Arreton; Ashy; Knighton; Shanklin.

C. lanceolatus, *L.* Spear Thistle. June to November.
Woods, wastes, and borders of fields; common.

C. eriophorus, *L.* Woolly-headed Thistle. July and August.
Pastures and wastes, mostly on the Chalk; rare: Apes Down
Valley; Bowcombe Down; Landslip.

C. palustris, *L.* Marsh Thistle. July and August.
Marshy meadows; common.

C. pratensis, *Huds.* Meadow Thistle. May to August.
Wet meadows; frequent: Freshwater; Northwood; Staplers;
Wilderness; &c.

C. acaulis, *L.* Dwarf Thistle. June to September.
Dry pastures, mostly on the Chalk; common.

C. arvensis, *Robson*. Creeping-rooted Thistle. July and Aug. Pastures and cultivated ground; common.

Carlina vulgaris, *L.* Carline Thistle. June to August. Dry, hilly pastures; common.

Arctium Lappa, *L.* Great Burdock. August. Copses and borders of fields; frequent: Shalfleet; Rookley; Appuldurcombe; Yarbridge; Yaverland; Brading; Whitefield Wood; Sea View.

A. minus, *Bernh.* Lesser Burdock. August. Copses and wastes; common.

A. intermedium, *Lange*. Intermediate Burdock. August. Copses and wastes; frequent: Freshwater; Idlecombe; Ashley; Shanklin; &c.

A. Newbouldii, *A. Bennett*. Narrow-leaved Burdock. August. Similar localities, but less frequent than *intermedium*: between Cowes and Newport; Blackgang; Bembridge; shore west of Ryde.

Serratula tinctoria, *L.* Saw-wort. July and August. Woods and bushy places; common.

Centaurea nigra, *L.* Black Knapweed. June to September. Meadows, borders of fields and hedges; common.

Var. decipiens, *Thuill.*: abundant on our chalk downs, and in dry pastures.

C. Scabiosa, *L.* Greater Knapweed. July to September. Similar localities; common.

C. Cyanus, *L.* Blue Cornflower. June to August. Cornfields; not common: Ningwood; Calbourne; Shorwell; Kingston.

C. solstitialis, *L.* Has been found growing in the Island, but has not been seen for many years, and probably was only a casual.

C. Calcitrapa, *L.* The same remark applies to this as to the preceding species.

Chrysanthemum segetum, *L.* Corn Marigold. June to Oct. Cultivated fields; not common, but abundant in some localities, as at Kingston, Rookley, and Godshill.

C. Leucanthemum, *L.* Ox-eye Daisy. July and August. Pastures and wastes; common.

C. Parthenium, *Pers.* Feverfew. July to September. Cultivated and waste ground; frequent, but probably escapes in all cases.

Matricaria inodora, *L.* Scentless Mayweed. June to Nov. Cultivated and waste ground; common.

M. discoidea, *DC.* (*M. suaveolens*, *Buch.*). June to October. Roadside wastes; rare: between Shide Mill and Pan Down; Apes Down Farm; by the river and on the quay at Newport.

Tanacetum vulgare, *L.* Tansy. July to September. Roadside hedges and waste ground; not common, but widely distributed; often, perhaps always, an escape from cultivation: Newbridge; Wilderness; Chale; Brighstone; Newchurch; &c.

Anthemis Cotula, *L.* Stinking Chamomile. June to September. Cultivated and waste ground; common.

Var. maritima, *Bromf.*: Norton.

A. arvensis, *L.* Corn Chamomile. May to August. Cultivated and waste ground; frequent: Colwell; Idlecombe; Shanklin; &c.

A. nobilis, *L.* Common Chamomile. June to September. Heaths and commons; frequent: Freshwater; Chale; St. Helens; &c.

Diotis maritima, *Cass.* Cotton-weed. July to September. This rare plant was found by Mr. Snooke (1823) growing on the shore near Sconce Point, Freshwater, but it has not been observed since.

Achillea Millefolium, *L.* Yarrow. June to September. Pastures and waysides; common.

A. Ptarmica, *L.* Sneezewort. July to September. Damp meadows and waysides; frequent: Cranmore; Wilmingham; Parkhurst; Alvington; near East Medina Mill; Staplers; Mount Misery.

Artemisia Absinthium, *L.* Common Wormwood. Aug. to Sept. Cliffs, waste ground, and roadsides; frequent in the Undercliff from Bonchurch to Blackgang.

A. vulgaris, *L.* Mugwort. July to September. Hedges and waste ground; common.

A. maritima, *L.* Seaside Wormwood. August and September. Salt marshes and seaside wastes; frequent: Yarmouth; Newtown; Thorness; Gurnard; Cowes; between Cowes and Newport; King's Quay; Brading; St. Helens.

Var. gallica, *Willd.*: Newtown, and probably in the other localities.

Filago germanica, *L.* Common Cudweed. June to September. Dry cultivated and waste ground; common.

F. apiculata, *G. E. Sm.* Red-tipped Cudweed. July and August. Sandy or gravelly cultivated fields; rare: Brighstone.

F. spathulata, *Presl.* July and August. Dry cultivated fields; frequent: Freshwater; Yarmouth; Wellow; Arreton; Brook; Brighstone; Hulverstone to Kingston; Becksfield Barn; Newchurch.

F. minima, *Fries.* Least Cudweed. June to September. Sandy and gravelly ground; not common: Bleak Down; St. George's Down; Buck's Heath, Niton; Queenbower.

Gnaphalium uliginosum, *L.* Marsh Cudweed. July to Sept. Damp roadside wastes; common.

G. sylvaticum, *L.* Upright Cudweed. July to September. Pastures, commons, and woods; recorded many years ago as "frequent in the S.E. parts of the I. of W.," but not observed during the last fifty years at the least.

Senecio vulgaris, *L.* Common Groundsel. January to December. Cultivated ground; very common.

S. sylvaticus, *L.* Mountain Groundsel. July to September. Sandy and gravelly ground; frequent: St. George's Down; &c.

S. erucifolius, *L.* Hoary Ragwort. July to September. Hedges, pastures, and wastes; common.

S. Jacobaea, *L.* Common Ragwort. July to September. Similar localities; common.

S. aquaticus, *Huds.* Marsh Ragwort. July to September. Wet pastures and wastes; common.

S. campestris, *DC.* (*S. spathulifolius*, *DC.*). Field Fleawort. May to July. Chalk downs; rare: Westover; Afton.

Bidens cernua, *L.* Nodding Bur Marigold. July to September. Ponds and marshy ground; frequent in the Medina and E. Yar valleys.

B. tripartita, *L.* Trifid-leaved B.M. July to September. Similar localities; perhaps not quite as common as *B. cernua*.

Inula Helenium, *L.* Elecampane. July and August. Pastures, woods, and hedges; not common: Freshwater, formerly frequent; between Freshwater and Cowes in several places; Quarr; Binstead; Haven Street; Blackbridge; Rowlands; Whippingham; Gurnard; Ashe; Landslip.

I. Conyza, *DC.* (*I. squarrosa*, *Bernh.*). Ploughman's Spikenard. August to October. Hedges and waste ground on the Chalk; rather common: Carisbrooke; &c.

I. crithmoides, *L.* Golden Samphire. July to October. Salt marshes; rare: Newtown; Werrar, below Newport on the west bank of the Medina.

Pulicaria dysenterica, *S. F. Gray.* Greater Fleabane. July to September. Damp meadows and waste places; common.

P. vulgaris, *Gaertn.* Lesser Fleabane. July to September. Damp wastes; rare: west side of the Wilderness; Hardingshute; Walpen; Sandown; St. Helens Green.

Bellis perennis, *L.* Common Daisy. April to June. Meadows and wayside banks, and wastes; very common.

Erigeron acris, *L.* Blue Fleabane. July to October. Dry pastures and wastes; frequent: Freshwater; Staplers; &c.

Aster Tripolium, *L.* Michaelmas Daisy. August and September. Salt marshes and shores; common.

Var. discoideus: Yarmouth; Newtown; Brading.

Solidago Virgaurea, *L.* Golden-rod. July to September. Heaths and woods; not common: Thorness; Parkhurst Forest; Staplers; Quarr.

Tussilago Farfara, *L.* Coltsfoot. March and April. Fields and wastes, on clay soils chiefly; common.

Petasites fragrans, *Presl.* Sweet-scented Butter-bur. Dec. Wastes; frequent, but probably always naturalized: Blackwater; Ventnor; &c.

Eupatorium cannabinum, *L.* Hemp Agrimony. July to Sept. Sides of streams, and damp woods and hedges; common.

Cichorium Intybus, *L.* Chicory. Endive. July to October. Borders of fields and roads; not common: near Ningwood; Hampstead; Bowcombe Valley; St. Lawrence.

Lapsana communis, *L.* Nippewort. June to November. Hedges and wastes; common.

Hypochaeris glabra, *L.* Smooth Cat's-ear. June to August. Dry sandy or gravelly heaths and wastes; rare: field near Cliff Farm; near Alverstone Mill; St. Helens Spit.

H. radicata, *L.* Long-rooted Cat's-ear. June to October. Meadows and wastes; common.

Leontodon hirtus, *L.* (*Thrinicia nudicaulis*, *Britten*). Hairy Hawkbit. June to August. Sandy and gravelly fields and wastes; common.

L. hispidus, *L.* Rough Hawkbit. June to September. Dry meadows and waysides; common.

L. autumnalis, *L.* Autumnal Hawkbit. August and September. Similar localities; common.

Picris hieracioides, *L.* Hawkweed Ox-tongue. June to Oct. Banks and wastes, especially on the Chalk; frequent: Freshwater; Arreton; &c.

Var. gracilis, *Jord.*: Apes Down; St. Lawrence.

Helminthia echioides, *Gaertn.* Bristly Ox-tongue. June to Oct. Hedge-banks and wastes; frequent: Yarmouth; Newport; Chale; Ashey; &c.

Tragopogon pratensis, *L.* Yellow Goat's-beard. June and July. Meadows and hedge-banks; frequent: Totland Bay; Freshwater; Apes Down; East Standen; Bembridge Down; &c.

Var. minor, *Mill.*: more frequent than the type.

T. porrifolius, *L.* Purple Goat's-beard. Salsify. May and June. Waste ground; not common: by the Medina below Newport; railway embankment north of Brading; Sea View; Sandown; Niton.

Taraxacum officinale, *Web.* Dandelion. March to October. Fields and wastes; common.

Var. erythrospermum, *Andrz.*: Standen Elms, and other localities near Newport; Ashey Down; St. Helens Spit.

Var. palustre, *DC.*: Thorness Wood; Sandown; Bembridge; St. Helens.

Lactuca virosa, *L.* Strong-scented Lettuce. July and August. Hedge-banks; very rare: by the roadside near Winford Firs.

L. muralis, *Gaertn.* Ivy-leaved Lettuce. June to August. Walls, rocks, and shady banks, especially on or near the Chalk; not common: Westover; Knighton; Cowpit Cliff, Shanklin; &c.

Sonchus oleraceus, *L.* Common Sow Thistle. June to October. Cultivated and waste ground; common.

S. asper, *Hill.* Rough Sow Thistle. June to October. Similar localities, and as common as the last.

S. arvensis, *L.* Corn Sow Thistle. June to September.
Cultivated fields; common.

Crepis taraxacifolia, *Thwill.* Small Rough Hawk's-beard.
June and July. Cultivated ground; rare: Niton; Shanklin;
Freshwater.

C. setosa, *Hall fil.* Bristly Hawk's-beard. July and August.
Cultivated ground; rare: Totland; Compton; Bouldner; Thorley;
Gurnard; Wootton.

C. virens, *L. (C. capillaris, Wallr.)*. Smooth H.-b. June to Sept.
Meadows and waste ground; common.

C. biennis, *L.* Large Rough H.-b. July to September.
Cultivated fields; rare: Totland; Whippingham.

Hieracium Pilosella, *L.* Mouse-ear Hawkweed. May to July.
Dry pastures and banks; common.

Var. pilosissimum, Fries: cliffs, Freshwater.

H. vulgatum, *Fries.* June and July.
Woods and banks; rare: Bordwood; Morton Lane, Brading.

H. tridentatum, *Fries.* Three-toothed H. July to September.
Woods and banks; frequent: Nunwood Copse, Ningwood; East
Standen; Moortown; Shorwell; Atherfield; Luccombe; Bem-
bridge.

H. umbellatum, *L.* Umbelled H. August and September.
Heaths and bushy places; frequent: Alum Bay; Rookley;
Brading; &c.

H. boreale, *Fries.* July to September.
Woods and hedge-banks; not common: Alum Bay; Parkhurst
Forest; Firestone Copse; Staplers; Guildford Lane; Alverstone
Lynch.

CAMPANULACEAE

Jasione montana, *L.* Sheep's-bit Scabious. June to August.
Sandy pastures and wastes; not common: Bleak Down; Black-
gang; Kingston; Blackpan; Apse; Shanklin; Sandown; Alver-
stone.

Campanula glomerata, *L.* Clustered Bell-flower. May to Oct.
Pastures and banks on the Chalk; common from Needles to Bem-
bridge.

C. Trachelium, *L.* Nettle-leaved Bell-flower. July to Sept.
Woods and hedges, principally on the Chalk: Swainston; Row-
ledge; Lorden Copse; Westridge; and other copses west of
Newport; apparently less frequent (if it occurs at all) to the east of
the Medina.

C. rotundifolia, *L.* Hair-bell. June to October.
Heaths and dry pastures; common.

Specularia hybrida, *A.DC.* (*Legousia hybrida, Delarbre*).

Venus's Looking-glass. June to September. Cultivated fields; frequent: Alum Bay; Westover; Sandown; &c.

Wahlenbergia hederacea, *Rehb.* Ivy-leaved Campanula. July and August. Wet heaths; rare: Bleak Down, and the Wilderness; Budbridge Moor; Kingston; Pyle; Gladdice.

ERICACEAE

Vaccinium Oxycoccus, *L.* Cranberry. June and July. Boggy moors; very rare: Wilderness.

V. Myrtillus, *L.* Common Bilberry. April and May. Dry woods and heaths; not common: Kingston; Marvel Copse; St. George's Down; Shanklin; Blackpan; Whitwell.

Erica Tetralix, *L.* Cross-leaved Heath. June to August. Wet heaths; frequent: Freshwater; Bleak Down and Wilderness; Parkhurst Forest, and other places near Newport; Sandown.

E. cinerea, *L.* Fine-leaved Heath. June to September. Heaths; common.

Calluna vulgaris, *Hull.* Ling. June to August. Heaths; common.

Monotropa Hypopithys, *L.* Bird's-nest. June to September. Under beeches, having every appearance of a parasite, but not yet proved to be so; rare: Calbourne Hummet; Westover Wood; Carisbrooke Castle; between Luccombe and Bonchurch.

JASMINACEAE

Fraxinus excelsior, *L.* Ash. April and May. Woods and hedges and on the open downs; common.

Ligustrum vulgare, *L.* Privet. June and July. Woods and hedges; common.

APOCYNACEAE

Vinca major, *L.* Greater Periwinkle. July and August. Hedges; an escape from gardens.

V. minor, *L.* Lesser Periwinkle. March to October. Woods; rare: Bottom Ground Copse, Idlecombe; Centurion's Copse, Bembridge.

GENTIANACEAE

Erythraea Centaurium, *Pers.* (*Centaurium umbellatum*, *Gilib.*).

Common Centaury. June to August. Pastures, hedge-banks, and wastes; common.

Var. capitata, Koch: downs, Freshwater.

E. pulchella, Fries. Dwarf Centaury. July to September. Rough pastures and wastes; common.

Var. tenuiflora, Link: estuary marshy ground: west bank of Medina below Newport; King's Quay.

E. capitata, Willd. Tufted Centaury. June to August. Downs; rare: Freshwater; Afton Down; Compton.

Chlora perfoliata, L. (*Blackstonia perfoliata, Huds.*). Yellow Centaury. June to September. Rough pastures and banks; frequent: downs, Freshwater; Carisbrooke; Ventnor; shores, Gurnard; Wootton; Quarr; Bembridge; &c.

Gentiana Amarella, L. Autumnal Gentian. July to October. Downs and dry pastures on the Chalk; frequent: Freshwater; Pan Down; &c.

G. lingulata, C. A. Agardh. May and June. Similar localities; rare: Afton; Brighstone; Steephill; Bonchurch; Bembridge.

G. campestris, L. Field Gentian. August and September. Heaths and downs; rare: Colwell; Afton Down.

Menyanthes trifoliata, L. Bog-bean. May to August. Boggy marshes; frequent: Freshwater; Wilderness; &c.

CONVOLVULACEAE

Convolvulus arvensis, L. Small Bindweed. June to Sept. Cultivated fields and wastes; common.

C. sepium, L. Great Bindweed. June to October. Hedges and woods; common.

C. Soldanella, L. Sea Bindweed. July to August. Sandy shores; not common: Norton; Sandown; Brading Harbour; St. Helens Spit.

Cuscuta europaea, L. Greater Dodder. July to September. Parasitic on herbaceous plants; rare: Bouldnor (1848); between Kerne and Alverstone Mill (1841); near Lake. Not recorded for some years.

C. Epithymum, Murray. Lesser Dodder. July to October. Parasitic on shrubby plants—gorse, heather, &c.; rather common.

C. Trifolii, Bab. Clover Dodder. July to September. Parasitic on clover; frequent: Thorley; Whippingham; &c.

SOLANACEAE

Solanum Dulcamara, L. Bitter-sweet. Woody Nightshade. June to August. Woods, hedges, and wastes; common.



H. F. Poole, photo.

This specimen of HENBANE was found growing at the mouth of the Newtown River. The interest attaching to this particular plant is that, owing to the viscid sap which has exuded from its leaves, it has "captured" 455 small flies and 2 beetles.

S. nigrum, *L.* Black Nightshade. June to October.
Cultivated and waste ground; frequent: Freshwater; Newport;
Sandown; Ryde; &c.

Atropa Belladonna, *L.* Deadly Nightshade. June to August.
Waste ground; very rare: chalk-pit, Westover; formerly at
Knighton.

Hyoscyamus niger, *L.* Henbane. May to August.
Cultivated and waste ground, and shores; not common: Gurnard, &c.

Datura Stramonium, *L.* Thorn-apple. July to August.
Waste ground occasionally.

SCROPHULARIACEAE

Verbascum Thapsus, *L.* Great Mullein. High Taper. June to August. Waste ground, especially on chalk; common.

V. nigrum, *L.* Dark Mullein. June to August.
Dry wastes, especially on the Chalk; not common: Merston; Arreton; Alverstoke; near Ryde.

V. Blattaria, *L.* Moth Mullein. July to September.
Occurs occasionally as an escape.

Scrophularia aquatica, *L.* Water Figwort. June to August.
Sides of streams and other wet places; common.

S. nodosa, *L.* Knotty-rooted Figwort. June to August.
Dry hedge-banks and wastes; common.

Digitalis purpurea, *L.* Foxglove. June to August.
Sandy or gravelly wastes; common.

Antirrhinum majus, *L.* Great Snapdragon. June to August.
Walls; naturalized occasionally.

A. Orontium, *L.* Corn Snapdragon. July to September.
Sandy or gravelly cultivated fields; rather common.

Linaria Cymbalaria, *Mill.* Ivy-leaved Toadflax. Roving Sailor. April to November. Old walls; frequent: Newport; Chale; &c.

L. Elatine, *Mill.* Sharp-leaved Toadflax. June to November.
Cultivated ground, especially on the Chalk; frequent: Totland; near Newport; &c.

L. spuria, *Mill.* Round-leaved Toadflax. June to November.
Similar localities, but less common: Yarmouth; Carisbrooke.

L. repens, *Mill.* Striped Toadflax. June to September.
Hedges and wastes; rather rare: near Yarmouth, Thorley, and Bouldnor; between Newport and Cowes; Staplers.

L. vulgaris, *Mill.* Yellow Toadflax. July to September.
Hedge-banks and borders of fields; common.

L. minor, *Desf.* Least Toadflax. May to August.
Cornfields and wastes; common.

Mimulus luteus, *L.* (*M. Langsdorfii*, *Donn.*). Monkey-plant.

June to August. Naturalized by sides of streams: Gatcombe; Peartree; Alverstone.

Veronica hederaefolia, *L.* Ivy-leaved Speedwell. Apr. to July. Hedge-banks and wastes; common in some localities, as about Carisbrooke and Newport; Niton; Sandown; and often in cultivated fields on the Chalk.

V. polita, *Fries* (*V. didyma*, *Ten.*). Grey Procumbent Speedwell. January to December. Cultivated and waste ground; common.

V. agrestis, *L.* Green Procumbent Speedwell. April to Sept. Cultivated fields and wastes; common.

V. Buxbaumii, *Ten.* Buxbaum Speedwell. March to September. Cultivated fields and wastes; very common. This is an instance of rapid and persistent increase of distribution, as the plant seems only to have been first noticed as an introduction in 1820.

V. arvensis, *L.* Wall Speedwell. April to July. Dry wastes, walls, and banks; common.

V. serpyllifolia, *L.* Thyme-leaved Speedwell. May to July. Cultivated ground and wastes; common.

V. spicata, *L.* Spiked Speedwell.

Once recorded as found on St. George's Down, but probably a mistake.

V. officinalis, *L.* Com. Speedwell. May to August. Heaths, pastures, and woods; common.

V. Chamaedrys, *L.* Germander Bird's-eye. May to July. Hedges and woods; common.

V. montana, *L.* Hill Speedwell. April to July.

Woods and shady places; frequent: Staplers; copses at Shanklin; &c.

V. scutellata, *L.* Marsh Speedwell. June to August.

Bogs and marshy ground; not common: Freshwater; Wilderness; Lower Knighton Mill.

V. Anagallis, *L.* Water Speedwell. June to August.

Margins of ponds and ditches; frequent: Carisbrooke; &c.

V. Beccabunga, *L.* Brooklime. May to August.

Similar localities; common.

Euphrasia officinalis, *L.* Eyebright. May to September.

Dry heaths and pastures; common. Mr. Townsend in his "Hants Flora" gives five species of *Euphrasia* as found in the Isle of Wight, namely: *E. stricta*, *Host.*: Freshwater; *E. brevipila*, *Burn. and Grem.*: Ventnor; *E. nemorosa*, *H. Mart.*: common; *E. curta*, *Fries*: Afton Down; *E. occidentalis*, *Wettst.*: Freshwater Downs, St. Catherine's Cliff.

Bartsia Odontites, *Huds.* (*Odontites rubra*, *Gil.*). Red Eyebright. June to August. Pastures and wastes; common.

B. viscosa, *L.* (*Lasiopera viscosa*, *Hoffm.*). Marsh Eyebright. July to September. Borders of damp fields; very rare: Foreland, Bembridge.

Pedicularis palustris, *L.* Marsh Lousewort. Red Rattle.

May to Aug. Marshes; rather common: Freshwater; Newbridge; Westcourt; Carisbrooke; Wilderness; Apse; Sandown.

P. sylvatica, *L.* Small Lousewort. April to July.

Wet heaths and pastures; common.

Rhinanthus Crista-galli, *L.* Yellow Rattle. May to July. Meadows; common.

Melampyrum arvense, *L.* Purple Cow-wheat. June to Aug. Cornfields and borders of fields; rare: Whitwell; St. Lawrence.

M. pratense, *L.* Yellow Cow-wheat. May to August. Woods and bushy places; common.

OROBANCHACEAE

Lathraea Squamaria, *L.* Toothwort. April and May.

Parasitic on Hazel; not uncommon: copses at Bowcombe, Standen, &c.

Orobanche coerulea, *Vill.* (*O. purpurea*, *Jacq.*). Purple Broomrape. June to August. Parasitic on Yarrow (*Achillea Millefolium*) in sandy soil; rare: cliffs, Sandown; Bordwood; Landguard.

O. major, *L.* Greater Broomrape. May to July.

Parasitic on roots of furze; rare: Lynn Common; Briddlesford; Quarr.

O. Picridis, *F. W. Schultz.* June and July.

Parasitic on *Picris hieracioides*; very rare: Rosehall Green, Freshwater Cliffs. (Noted as late as August, 1883.)

O. Hederae, *Duby.* Ivy Broomrape. June to October.

Parasitic on Ivy; rare: Brighstone; Whitwell; Undercliff.

O. minor, *Smith.* Lesser Broomrape. June to October.

Parasitic on clover and other plants; common.

O. amethystea, *Thuill.* Sea Holly Broomrape. June to October.

Parasitic on Sea Holly, *Eyrngium maritimum*; very rare: St. Helens Spit.

VERBENACEAE

Verbena officinalis, *L.* Vervain. July and August.

Hedge-banks and waste ground; frequent: near Newport; &c.

LABIATAE

Lycopus europaeus, *L.* Gipsywort. June to August.

Borders of ponds and streams; frequent: Freshwater; Gurnard; Newport; Ninham; Kingston; Sandown; Godshill; Hardingshute.

Mentha rotundifolia, *Huds.* Round-leaved Mint. Aug. and Sept.

Hedge-banks and wastes; frequent: near Blackwater; Undercliff, &c.

: **M. piperita**, *L.* Pepper-mint. August and September.

Wet ground; very rare: Freshwater; near Ryde; by the side of the Medina below Shide. Both the last localities need recent records.

M. aquatica, *L.* Capitata Mint. August and September.

Borders of streams, and wet ground; common.

M. sativa, *L.* (*M. gentilis*, *L.*). Common Mint. Aug. and Sept. Wet waste ground.

Var. genuina: near Haven Street; Brighstone; Yarbridge.

Var. paludosa, *Syme*: Freshwater.

M. rubra, *Sm.* Red Mint. July and August.

Wet ground; rare: Colwell; Shalfleet; Niton; Whitwell; Shanklin.

M. arvensis, *L.* Corn Mint. July to September.

Cultivated fields; common.

M. Pulegium, *L.* Pennyroyal. July to September.

Wet heaths; rare: Apse; St. Helens.

Thymus Serpyllum, *L.* Creeping Wild Thyme. July to Sept.

Dry banks; common.

T. Chamaedrys, *Fries.* Larger Wild Thyme. July to Sept.

Similar localities, but less common: Freshwater; Bleak Down; &c.

Origanum vulgare, *L.* Marjoram. July and August.

Dry banks, especially on the Chalk; common.

Calamintha Clinopodium, *Spenn.* (*Clinopodium Calamintha*, *O. Kuntze*). Basil. June to August. Dry banks, especially on the Chalk; common.

C. Acinos, *Clairv.* (*Clinopodium Acinos*, *O. Kuntze*). Basil Thyme. June to August. Dry banks, especially on the Chalk; common.

C. officinalis, *Moench* (*Clinopodium Calamintha*, *O. Kuntze*). Calamint. July to September. Dry banks; not very common: Thorley; Shalfleet; Swainston; Carisbrooke; Quarr; Apse; Bonchurch; Yaverland.

Var. Briggsii, *Syme*: Carisbrooke.

C. sylvatica, *Bromf.* (*Clinopodium grandiflorum*, *O. Kuntze*). Wood Calamint. August to October. Copse on the Chalk; very rare: Apes Down Valley.

Melissa officinalis, *L.* Balm.

Occasionally found naturalized near houses.

Nepeta Cataria, *L.* Cat-mint. July to September.

Hedge-banks, mostly on the Chalk; not common: Freshwater; Calbourne; Apes Down; Bowcombe Down; Moortown; Duxmoor; Undercliff.

N. Glechoma, *Benth.* (*N. hederacea*, *Trev.*). Ground Ivy. March to June. Hedges and woods; common.

Salvia Verbenaca, *L.* Wild Sage. May to October.

Banks and pastures, generally on the Chalk; rather common: Freshwater; Carisbrooke; E. Cowes; &c.

S. pratensis, *L.* Has occurred at Appuldurcombe, Puckaster, and Niton; but there is no record since 1854.



Percy Wadham, photo.

WOOD CALAMINT (*CALAMINTHA SYLVATICA*).

A very local plant.

- Prunella vulgaris**, *L.* Self-heal. July and August.
Hedges and pastures; common.
- Scutellaria galericulata**, *L.* Com. Skull-cap. July and August.
Banks of streams and wet places; frequent: by the Western Yar; near Newport; &c.
- S. minor**, *Huds.* Lesser Skull-cap. July to September.
Similar localities, but perhaps less common: Freshwater; Wilder-ness; Sandown; &c.
- Marrubium vulgare**, *L.* White Horehound. June to Sept.
Chalk downs; not very common, but found in various localities from Freshwater to Bembridge.
- Ballota nigra**, *L.* Black Horehound. June to August.
Hedges and wastes; very common.
- Stachys Betonica**, *Benth.* (*S. officinalis*, *Trev.*). Wood Betony. June to August. Woods and hedges; frequent: Bohemia; between Sandown and Shanklin; &c.
- S. palustris**, *L.* Marsh Woundwort. July and August.
Wet thickets and ditch banks; frequent: Brook; Blackwater; &c.
- S. sylvatica**, *L.* Hedge Woundwort. July and August.
Hedges and ditch banks; common.
- S. arvensis**, *L.* Corn Woundwort. April to November.
Cultivated fields; frequent: Colwell; Newport; Bembridge; &c.
- Galeopsis angustifolia**, *Ehrh.* Red Hemp-nettle. July to Sept.
Dry cultivated fields; frequent: Apes Down; Newport; &c.
Var. canescens: between Newtown and Calbourne.
- G. Tetrahit**, *L.* Common Hemp-nettle. July to September.
Cultivated fields and wastes; common.
- G. versicolor**, *Curt.* (*G. speciosa*, *Mill.*).
Occurred on St. George's Down in 1895.
- Lamium amplexicaule**, *L.* Henbit Dead-nettle. May to Aug.
Cultivated and waste ground; frequent: near Newport; New-church; &c.
- L. hybridum**, *Vill.* Cut-leaved Dead-nettle. April to July.
Hedge-banks and waste ground; not common: between Marvel Wood and Whitecroft; Kingston; Nettlesstone; Shanklin; Bem-bridge.
- L. purpureum**, *L.* Red Dead-nettle. All the year.
Hedges and wastes; very common.
- L. album**, *L.* White Dead-nettle. All the year.
Hedges and wastes; very common.
- L. Galeobdolon**, *Crantz.* Yellow Archangel. April to June.
Woods and thickets; frequent: Apes Down; Shanklin; &c.
- Ajuga reptans**, *L.* Bugle. May and June.
Wet pastures and thickets; common.
- A. Chamaepitys**, *Schreb.* Ground Pine. May and June.
Dry fields; reported as found near Week Farm, Niton, but not during the last fifty or sixty years.

Teucrium Scorodonia, *L.* Wood Sage. July and August.

Dry banks and bushy places; common.

T. Chamaedrys, *L.* Wall Germander.

Recorded as occurring at Carisbrooke Castle, but there is no record for the past 100 years.

BORAGINACEAE

Echium vulgare, *L.* Viper's Bugloss. June to September.

Dry wastes, and on walls; frequent: Freshwater; Apes Down; &c.

Pulmonaria angustifolia, *L.* Lungwort. March to June.

Woods and thickets on clay soil, north of the Chalk; abundant: Parkhurst; Combley; &c.

Lithospermum officinale, *L.* Com. Gromwell. May and June.

Dry wastes; frequent: Totland; Apes Down; Rew; Quarr; Pan Down; Brighstone; Gurnard; &c.

L. arvense, *L.* Corn Gromwell. April to July.

Cultivated fields and on waste ground; local: Bowcombe; Bembridge; &c.

Myosotis caespitosa, *F. Schultz.* Tufted Water Forget-me-not.

May to August. Ditches, marshes, and other watery places; not uncommon: Freshwater Marshes; Rookley; Sandown Marshes; &c.

M. palustris, *Relhan* (*M. scorpioides*, *L.*). Great W.F. May to August. Sides of streams and ditches and in marshes; rare: Yar Marshes; Calbourne; Sandown to Herringford; Yarbridge; Alverstone.

M. repens, *G. Don.* Creeping W.F. June to August.

Boggy meadows, and ditches in boggy places; more frequent than *M. palustris*: Wilderness; between Debbourne and Gurnard; St. Helens Green; Newchurch Marsh.

M. arvensis, *Hill.* Field Forget-me-not. June to August.

Cultivated and waste grounds, and hedge-banks; very common.

Var. umbrosa: Niton Undercliff.

M. collina, *Hoffm.* Dwarf Forget-me-not. April and May.

Dry banks; common.

M. versicolor, *Sm.* Yellow and Blue Forget-me-not. Apr. to June.

Pastures and banks; common.

Lycopsis arvensis, *L.* Small Bugloss. May and June.

Cultivated ground, and waste places on sand; rare and local: fields east of Burnt Wood; between Shorwell and Blackgang; Luccombe; Lake; Sandown; Shanklin; Newchurch; Arreton; between Brading and Newport.

Borago officinalis, *L.* Common Borage. May and June.

Waste ground; naturalized occasionally: Yarmouth; Sandown; Bonchurch; Arreton; St. Lawrence; Godshill; near Brading; &c.

Symphytum officinale, *L.* Common Comfrey. May to August. Stream sides and wet places; common.

Var. patens, *Sibth.*: common.

Cynoglossum officinale, *L.* Common Hound's-tongue. May to July. Dry waste ground, shores, &c.; local: Yarmouth; Niton; Undercliff; Bonchurch; St. Lawrence; Steephill; &c.

Var. subglabrum, *Syme*: Bonchurch; St. Lawrence; Bank End; Dodpits; Puckaster; Berry Lane; Afton Down; Totland.

LENTIBULARIACEAE

Pinguicula lusitanica, *L.* Pale Butterwort. June to Sept. Turfy bogs; very rare: Cockleton Little Moor, near West Cowes; Colwell Heath (? extinct); near Bohemia (1908).

Utricularia vulgaris, *L.* Greater Bladderwort. June to Aug. Ponds and ditches; very rare: Easton Marsh.

U. minor, *L.* Lesser Bladderwort. July to September. Pools, and streams in bogs; very rare: Langbridge Farm, by Newchurch; between Horringford and Newchurch.

PRIMULACEAE

Primula vulgaris, *Huds.* Primrose. March to June. Woods, banks, &c.; common.

Var. variabilis, *Goup.* = *P. officinali-vulgaris*, *Syme.* False Oxlip. These names represent hybrids between *P. vulgaris* and *P. veris*.* Symington Copse; copse at North Fairlee; about Ryde; Whitefield Wood; Quarr; near Landguard Farm; between Steephill and St. Lawrence; field by Morton House; St. Helens.

P. veris, *L.* Cowslip. April and May. Old pastures, hedge-banks, &c.; common on calcareous soil.

Lysimachia vulgaris, *L.* Com. Loosestrife. July and August. Wet meadows and thickets, and borders of streams; only locally common: Freshwater Marshes; Wilderness, and other parts of Medina Valley; Pan Moor; between Wootton and Palmer's Brook; Sandown Level; Horringford; Godshill; Stone; Budbridge; between Mersley and Langbridge; Kingston.

L. Nummularia, *L.* Creeping Loosestrife. June and July. Damp woods, banks, and stream-sides; very rare and doubtfully wild: near West Cowes; near Newport; field opposite Lord Spencer's house, Ryde.

L. nemorum, *L.* Yellow Pimpernel. May to August.

* The true Oxlip, *Primula elatior*, *Jacq.*, does not occur in the Isle of Wight, and is indeed only found in the counties of Cambridge, Essex, and Suffolk.

Moist woods and thickets; not common: Whitefield Wood; *Apse Castle; Newchurch; St. Clare, near Ryde; Osborne; New Copse, Wootton; Staplers Copse.

Anagallis arvensis, *L.* Common Pimpernel. May to November. Cultivated and waste ground; common.

Var. coerulea, *Sm.*: rather uncommon: Quarr Copse; Westridge; Sandown; Bonchurch; Alverstone; Luccombe; Brading.

A. tenella, *Murray*. Bog Pimpernel. July and August. Boggy and moist heaths; not common: Colwell; Medina Valley; Blackpan; &c.

Centunculus minimus, *L.* Small Chaffweed. June to October. Damp places on sandy or gravelly soil; not common: Freshwater Marsh; Colwell Heath; the Warren at Alum Bay; Headon Hill; Heath Farm; Fishbourne and Ryde roads; Wootton; Bleak Down; St. George's Down.

Glaux maritima, *L.* Sea Milkwort. June and July. Salt marshes and seaside wastes; common.

Samolus Valerandi, *L.* Common Brookweed. June to August. Wet places in meadows near the sea; not common: Yar Marshes; Freshwater Marshes; Colwell; Alum Bay; Thorley Marsh; Wootton River; Blackgang; St. Lawrence; Steephill.

PLUMBAGINACEAE

Armeria vulgaris, *Willd.* (*A. maritima*, *Willd.*). Thrift. Sea Pink. April to September. Banks and cliffs by the sea; common.

Statice Limonium, *L.* (*Limonium vulgare*, *Miller*). Sea Lavender. July to September. Salt marshes and mud flats by the sea; common.

S. rariflora, *Drejer* (*L. humile*, *Miller*). Remote-flowered Sea Lavender. August and September. Same places as *S. Limonium*, but less common: Yar, near Freshwater; Newtown; Wootton River.

S. Neumani = *L. Neumani*, *Salmon*. Supposed to be a hybrid: Yar, Freshwater; and probably in similar localities.

S. occidentalis, *Lloyd* (*L. binervosum*, *Salmon*). Rocky seashore; very rare: Freshwater cliffs. Probably extinct, if the original record was not a mistake.

PLANTAGINACEAE

Plantago major, *L.* Greater Plantain. June to August. Meadows, waysides, &c.; very common.

P. media, *L.* Hoary Plantain. May to October. Meadows, principally on calcareous soil; common.

P. lanceolata, *L.* Ribwort. Com. Rib-grass. June and July.
Pastures and wastes; very common.

Var. Timbali, *Reich. fil.*: clover fields and new pastures; introduced: downs near Idlecombe; Shanklin.

P. maritima, *L.* Sea Plantain. June and July.
Salt marshes, and banks by the sea; common.

P. coronopus, *L.* Buck's-horn Plantain. June and July.
Heaths, pastures, and waste ground; common.

CHENOPODIACEAE

Suaeda maritima, *Dumort.* Annual Sea Blite. Aug. and Sept.
Salt marshes, and shores of tidal rivers; common.

Salsola Kali, *L.* Prickly Saltwort. July and August.
Sandy seashores; local: Yarmouth; between Newtown and Cowes; Totland; Compton Bay; Shanklin; Sandown; St. Helens Spit.

Salicornia herbacea, *L.* (*S. europaea*, *L.*). Common Glasswort.
Marsh Samphire. August and September. Muddy salt-marshes; abundant: Yar; Newtown; Medina; Wootton; Brading; St. Helens.

The following sub-species, or varieties, occur:—

Salicornia procumbens, *Sm.* Procumbent Glasswort. August and September. Muddy salt-marshes, &c.; frequent: Yarmouth; Newtown Marshes; west bank of Medina.

S. ramosissima, *Woods.* Many-branched Glasswort.
Salt marshes; rather rare: Newtown.

S. pusilla, *Woods.* Small Glasswort.

Var. gracillima, *M.S.*: near Yarmouth.

S. radicans, *Sm.* Rooting Glasswort. August and September.
Muddy shores; not unfrequent: Yarmouth; West Yar; Newtown; Medina; Wootton Creek; Brading Harbour.

S. lignosa, *Woods.* Woody Glasswort. September and October.
Gravelly shores, and dry mud flats on seashore; not unfrequent: Brading Harbour.

Beta maritima, *L.* See Beet. July and August.
Seashores, sea cliffs, and seaside wastes; common.

Chenopodium ficifolium, *Sm.* (*C. serotinum*, *L.*). Fig-leaved Goosefoot. August and September. Waste places; rare. Has been recorded for the Island without any definite locality.

C. polyspermum, *L.* Allseed Goosefoot. July to September.
Damp waste ground.

Var. genuinum = *C. cymosum*, *Cheval*: very rare: near Shanklin.

Var. acutifolium: rather rare: Yarmouth; Shalfleet; Ningwood; Calbourne; Parkhurst Forest; east bank of Medina; Northwood; near Ryde; Sandown; Godshill; Newchurch; Shanklin; Merston; Bembridge.

C. Yulvaria, *L.* Stinking Goosefoot. July and August.
Waste places, particularly on the coast; rare: East Cowes.

C. album, *L.* White Goosefoot. July and August.
Waste and cultivated grounds; common.

Var. candicans, *Lam.*: common.

Var. viride, *L.*: Luccombe; Bembridge; Shanklin; Sandown; &c.

Var. paganum, *Reich.*: Bembridge; &c.

C. murale, *L.* Nettle-leaved Goosefoot. July and August.
Waste ground and roadsides; rare: Freshwater; Yarmouth; Ningwood; East Cowes; Newport; Newchurch; Sandown; St. Lawrence.

C. urbicum, *L.* Upright Goosefoot. August.
Rich waste ground and village greens; rare.

Var. intermedium: Chillerton; Troublefields; Ninham; Palmers; Yafford Mill; Brighstone; Compton Farm; Brook Farm; St. Helens Green; Sandown; Shanklin; Niton; Ventnor; Brading; Adgestone; Arreton; &c.

Var. ? C. deltoideum, *Lam.*: Yafford Mill; Yaverland Farm; Hide Farm; Sheepwash; Appuldurcombe.

C. rubrum, *L.* Red Goosefoot. July to October.
Waste ground: Freshwater Gate; Ningwood Green; Gatehouse Farm; Hardingshute Farm; Alverstone Mill; Bembridge. Not observed in any of these localities of late years.

Var. pseudobotryoides, *Wats.*: Hardingshute Farm.

C. glaucum, *L.* Oak-leaved Goosefoot. September.
Waste ground; very rare: Thorley (1837, 1868); Swainston (1839).

C. Bonus-Henricus, *L.* Good King Henry. May to August.
Waste ground; rather rare and local: Wellow; Gottens; Ninham; Quarr; Apse; Rew Farm; Arreton; near Bembridge.

Atriplex littoralis, *L.* Grass-leaved Sea Orache. July to Sept.
Waste land by the sea; common.

Var. marina = *A. serrata*, *Huds.*: Bouldnor; Newtown; banks of Medina; between Ryde and Wootton; Shanklin; Bembridge; Brading.

A. patula, *L.* Narrow-leaved Orache. July to October.
Waste ground; very common.

Var. angustifolia = *A. angustifolia*, *Sm.*: waste ground; common.

Var. erecta = *Var. serrata*, *Syme* = *A. erecta*, *Huds.*
Mostly in arable ground: near Freshwater; Calbourne; Parkhurst; between Cowes and Newport; Nunwell; St. Lawrence; Sandown; Shanklin; St. Helens; &c.

A. deltoidea, *Bab.* Triangular-leaved Orache. June to October.
Waste ground and seashores; not uncommon: Yarmouth; Calbourne; between Cowes and Newport; Steephill; Luccombe; Bonchurch; Brading; Bembridge.

A. hastata, *L.* = *A. Smithii*, *Syme*. Smith's Orache. Aug. to Oct.
Waste ground and seashores; common.

A. Babingtonii, *Woods*. Babington's Orache. August and Sept. Seashores; common.

A. laciniata, *L.* Frosted Sea Orache. July to September. Sandy seashores; rather rare: Norton Spit; Totland Bay; Ventnor; between Shanklin and Sandown; between Sea View and Brading; Bembridge; Foreland; St. Helens Spit.

A. portulacoides, *L.* (*Obione portulacoides*, *Moq.*). Sea Purslane. August to October. Banks and hedges near the sea; common.

POLYGONACEAE

Rumex conglomeratus, *Murr.* Sharp Dock. June to August. Wet waste places; common.

R. sanguineus, *L.* Bloody-veined Dock. June to August. Roadsides and waste ground; very common.

R. pulcher, *L.* Fiddle Dock. July to September. Roadsides and waste places; rather frequent: Freshwater; Yarmouth; Idlecombe; Heasley; &c.

R. obtusifolius, *L.* Broad-leaved Dock. July to September. Roadsides and waste places; common.

R. crispus, *L.* Curled Dock. June to August. Roadsides and waste ground; very common.

R. Hydrolapathum, *Huds.* Great Water Dock. July and Aug. Banks of rivers and ditches; local: Easton Marsh; Freshwater Gate; Yar banks; Sandown; Yarbridge; Newchurch.

R. maximus, *Schreb.* Schreber's Water Dock. July and August. Banks of rivers, and ditches in water meadows; rare: between Horringford and Alverstone.

R. Acetosa, *L.* Common Sorrel. May and June. Meadows and waysides; very common.

R. Acetosella, *L.* Sheep's Sorrel. May and June. Meadows and roadsides; very common.

Polygonum Convolvulus, *L.* Black Bindweed. July to Sept. Cultivated and waste ground; common.

Var. pseudo-dumetorum, *Wats.* = *var. sublatum*, *V. Hall*: East Cowes; Stonesteps, Calbourne; Niton; St. Lawrence; Luccombe; Shanklin Hotel garden.

P. aviculare, *L.* Common Knotgrass. June to September. Cultivated and waste ground; very common. A most variable species.

Var. vulgatum: waste ground, paths, newly-made roads and footpaths, roadsides, &c.; very common.

Var. agrestinum: cornfields and cultivated ground; frequent.

Var. arenastrum: waste ground, especially by the sea: St. Helens Spit.

Var. microspermum: waysides in sandy ground: Sea View; St. Helens Spit.

Var. rurivagum: cornfields and tilled grounds: Culvers.

Var. littorale: seashores; not common: Totland Bay; St. Helens Spit.

P. Raii, *Bab.* (*P. Roberti*, *Loisel.*). Ray's Knotgrass. Aug. to Sept. Sandy seashores; not common: Yarmouth; Norton Spit; Totland Bay; Colwell Bay; Freshwater Gate; Newtown Creek; Newtown to Gurnard; Brook; Sea View; St. Helens Spit.

P. Hydropiper, *L.* Water Pepper. August and September. Wet places, ditches, &c.; common.

P. minus, *Huds.* Small Persicaria. August and September. Wet meadows; very rare: Sandown Marshes.

P. mite, *Schrank.* Lax-flowered Persicaria. June to September. Ditches and wet places; very rare: Apley (1838); Pan Common (1858).

P. Persicaria, *L.* Spotted Persicaria. July to October. Cultivated ground and damp meadows; common.

Var. elatum, *Gren. & Godr.*: Blackwater Marshes; Sandown Marshes.

P. lapathifolium, *L.* Pale-flowered Persicaria. July to Sept. Cultivated and waste ground; common.

P. maculatum, *Bab.* Glandular Persicaria. July to September. Waste and cultivated ground; frequent: Newtown; Parkhurst; Wilderness; &c.

P. amphibium, *L.* Amphibious Persicaria. July to September. Ponds and ditches; frequent: Freshwater; Kingston; Chale; Sandown.

Var. terrestre, *Leers*: Freshwater; Yarmouth; Quarr; Sandown Marshes.

P. Bistorta, *L.* Great Bistort. Snakeweed. May to August. Damp meadows and pastures; rare: kitchen garden at Westridge, Ryde (introduced); meadow at Old Park, in 1838 (naturalized).

P. Fagopyrum, *L.* Buckwheat. Cultivated fields; not naturalized.

P. tataricum, *L.* Waste ground: Shide. A casual.

THYMELAEACEAE

Daphne Mezereum, *L.* Mezereon. March. Dry hilly and chalky woods; very rare: probably an alien, not even naturalized: near Wacklands; Apse Castle.

D. Laureola, *L.* Spurge Laurel. January to April. Woods and hedges; frequent: Yarmouth; Carisbrooke; Quarr; &c.

ELEAGNACEAE

Hippophae Rhamnoides, *L.* Sea Buckthorn. May.

Sandhills and waste ground by the sea; very rare, and doubtfully native: St. Helens Spit.

SANTALACEAE

Thesium humifusum, *DC.* Bastard Toadflax. June to August.

Downs and chalky banks; frequent: Freshwater; Carisbrooke; St. Helens Spit; Bowcombe Down; &c.

EUPHORBIACEAE

Euphorbia Peplis, *L.* Purple Spurge. July to September.

Sandy seashores; very rare. Found by Mr. J. G. Mill about 70 years ago at Sandown Bay; St. Helens Spit (1872), Dr. Daydon Jackson.

E. Helioscopia, *L.* Sun Spurge. Wartwort. June to September. Waste and cultivated ground; common.

E. platyphyllos, *L.* Broad-leaved Warted Spurge. June to Aug. Cultivated fields and wastes; uncommon: Colwell; Yarmouth to Ningwood; Shalfleet; Shalcombe; East Cowes; Garstons; West Cowes; Whippingham; Gunville; Ryde; Brading; Bembridge; St. Helens; Steephill.

E. amygdaloides, *L.* Wood Spurge. April to June. Woods and hedges; common.

E. Paralias, *L.* Sea Spurge. August and September. Sandy sea-coasts; very rare: Norton Spit (sown by Dr. Bromfield, 1848); Gurnard Bay (one plant, 1868); St. Helens Spit (sown by Dr. Bromfield, 1848).

E. portlandica, *L.* Portland Spurge. May to August. Banks and cliffs near the sea; rare: Culver Cliffs; St. Helens Spit.

E. Peplus, *L.* Petty Spurge. July to November. Cultivated and waste ground; common.

E. exigua, *L.* Dwarf Spurge. July to November. Cultivated and waste ground; common.

E. Lathyris, *L.* Caper Spurge. June and July. Occurs in cultivated and waste ground occasionally.

Mercurialis perennis, *L.* Perennial or Dog's Mercury. March to May. Woods and hedge-banks; common.

M. annua, *L.* Annual Mercury. French Mercury. August and September. Cultivated and waste ground; not common: Gurnard;

Northwood; Ryde; Godshill; Steephill; Ventnor; Bembridge; Wootton.

Var. ambigua, L.: with the common form, but rarely: St. John's garden, Ryde (now built over).

CERATOPHYLLACEAE

Ceratophyllum demersum, L. Common Hornwort. June and July. Ponds and ditches; rare: two ponds near Newport; Sandown Level.

URTICACEAE

Parietaria officinalis, L. (*P. ramiflora, Moench*). Common Wall Pellitory. June to September. Old walls, rocks, sea-cliffs, and hedge-banks; rather common.

Urtica dioica, L. Great Nettle. July and August. Cultivated and waste ground, and hedge-banks; very common.

Var. angustifolia, A. Blytt: occasionally: near Shanklin.

U. urens, L. Small Nettle. June to September. Waste ground; not very common: Carisbrooke; &c.

Humulus Lupulus, L. Hop. July and August. Hedges and thickets; common.

Ulmus campestris, Smith. Common Elm. March and April. Hedges and woods; very abundant, but probably not indigenous.

U. montana, Sm. (*U. glabra, Huds.*). Wych Elm. Mar. and Apr. Woods and hedges; local: Yarmouth; Northwood; Newport; Quarr; Westridge; Cowpit Cliff, Shanklin; East End, Bonchurch.

AMENTACEAE

Quercus Robur, L. Oak. April and May. Woods and hedges; common. Of this species there are three forms.
Var. pedunculata, Ehrh. Common Oak. Common in all parts of the Island.

Var. intermedia, D. Don.: near Shalfleet.

Var. sessiliflora, Salisb. Durmast Oak. Near Shalfleet; Elm Copse; East Standen Copse; Bordwood Forest; Wootton District.

Castanea vulgaris, Lam. Sweet or Spanish Chestnut. May. Woods; not indigenous: Westover; Parkhurst; Lorden Copse.

Fagus sylvatica, L. Beech. March and April. Upland woods, principally on the Chalk; common.

Corylus Avellana, L. Hazel. March and April. Woods, copses, hedges, &c.; common.

Carpinus Betulus, *L.* Hornbeam. May.

Woods and thickets; rare: Shorwell (planted?).

Alnus glutinosa, *Gaertn.* (*A. rotundifolia*, *Mill.*). Alder. March. Wet pastures and banks of streams; common.

Betula alba, *L.* (aggreg.). Birch. April and May.

Woods and heaths. There are two forms of this species.

Sub-species: **B. verrucosa**, *Ehrh.* (*B. pendula*, *Roth*). White Birch. Rare: S.E. of Ryde; Apse Castle.

Sub-species: **B. glutinosa**, *Fries.* Common Birch.

Frequent: Marvel Copse; Quarr; &c.

Myrica Gale, *L.* Sweet Gale. Dutch Myrtle. April.

Wet turfy bogs; not common: Wilderness; Alverstoke; &c.

Populus alba, *L.* White Poplar. Abele. March and April.

Woods and stream banks; probably introduced: Freshwater Gate; Calbourne.

P. canescens, *Sm.* Gray Poplar. March and April.

Damp woods, and hedges; not common; possibly introduced: Great Park; Wilderness; Briddlesford Heath; Barton Copse, Osborne; Pagham Farm; Landguard Farm.

P. tremula, *L.* Aspen. February and March.

Woods and thickets; common.

P. nigra, *L.* Black Poplar. March.

Damp ground; probably an alien: Medham; near Cowes; Watch-house Point, Bembridge; Sea View; near Steephill; Ninham Farm; near Cliff Farm.

Salix fragilis, *L.* Crack Willow. April and May.

Wet meadows, banks of streams, and osier beds; frequent; probably introduced: Nunwell; Yaverland; near Yarbridge; near Kerne Farm; Lower Knighton.

S. alba, *L.* White Willow. May.

River banks and osier beds; not common; probably introduced: Freshwater; Whitefield; Westridge.

Var. caerulea, *Sm.* Blue Willow.

Shalfleet; Bembridge Willow Beds (cultivated).

Var. vitellina, *L.* Golden Willow.

Ningwood; near Ashley Farm; Langbridge; Yaverland; Bembridge (cultivated).

S. triandra, *L.* Almond-leaved Willow. April and May.

Wet woods, and osier grounds; probably introduced: Redhill Farm; between Wootton and Newport; hedge near Ventnor; Bembridge (cultivated); Lower Knighton.

S. viminalis, *L.* Common Osier. April and May.

Wet places, &c.; not uncommon; probably introduced: Calbourne District; Shalfleet; Northwood Park; America, near Shanklin.

Hybrid: **S. rugosa**, *Leefe* = *S. Caprea* × *S. viminalis*.

Northwood Park; Marshcombe Copse; Yaverland.

Hybrid: **S. acuminata**, *Sm.* = *S. cinerea* × *S. viminalis*.

Damp woods and hedges; introduced: Redhill Farm; Appuldurcombe.

S. cinerea, *L.* Common Sallow. March and April.

Wet woods, &c.; very common.

S. aurita, *L.* Round-eared Willow. April and May.

Damp heaths and thickets; common.

S. caprea, *L.* Great Round-leaved Sallow. March and April.

Woods and hedges; common.

S. repens, *L.* Dwarf Willow. March and April.

Sandy, moist, or dry heaths; frequent: Freshwater; Parkhurst; Wootton; Sandown.

CONIFERAE

Pinus sylvestris, *L.* Scotch Pine. April and May.

Plentiful as planted trees. It is uncertain as to whether many of those occurring are self-sown, or if it be a true native.

P. Pinaster, *Ait.* = *P. maritima*, *Lam.* Cluster Pine.

Naturalized at Alum Chine.

Juniperus communis, *L.* Juniper. March and April.

Downs; very rare: down above Nunwell; St. Boniface Down.

Taxus baccata, *L.* Yew. March and April.

Chalk downs; very rare, except as planted: the down above Nunwell.

MONOCOTYLEDONES

TYPHACEAE

Typha latifolia, *L.* Great Reed-Mace. Bulrush. (Baccobolts, Wight.) Ponds and ditches; common.

T. angustifolia, *L.* Lesser Reed-Mace. June and July.

In similar places as *T. latifolia*; frequent. It would be of interest to observe whether or not *T. angustifolia* ousts (as it is thought) *T. latifolia*, when they have been growing together.

Sparganium ramosum, *Huds.* (*S. erectum*, *L.*). Branched Bur-Reed. June and July. Streams and brooks; common.

S. neglectum, *Beeby*. Beeby's Bur-Reed. June to August.

Similar localities; rare: stream above Shalfleet and southwards; stream, Landguard Manor.

S. simplex, *Huds.* Unbranched Bur-Reed. July.
Similar localities; frequent: Freshwater; Medina Valley; Eastern Yar Valley.

S. minimum, *Fries.* Small Bur-Reed. July and August.
Ditches and pools; very rare: in old clay pits east of Cranmore Farm, near Ningwood. (? now extinct.)

AROIDEAE

Arum maculatum, *L.* Cuckoo-pint. Lords and Ladies. March to May. Woods, thickets, and hedges; very common. The leaves appear in February.

A. italicum, *Miller.* Italian Cuckoo-pint. June and July.
Woods, thickets, and open ground among bushes; rare: between Steephill and Niton. The leaves appear in September.

LEMNACEAE

Lemna trisulca, *L.* Ivy-leaved Duckweed. June.
Ponds and ditches, chiefly near the sea; local: Easton Marsh; Sandown Level; Bembridge.

L. minor, *L.* Lesser Duckweed. June and July.
Ponds and slow streams; common.

L. gibba, *L.* Gibbous Duckweed. July and August.
Still ponds; rare: near Yafford Farm; Brading Harbour.

L. polyrrhiza, *L.* Greater Duckweed.
Clear stagnant pools and ditches; rare: Freshwater Gate; Sandown Level.

NAIADACEAE

Potamogeton natans, *L.* Floating Pondweed. June and July.
Ponds and streams; not uncommon: Freshwater; Medina Valley; Newchurch; &c.

P. polygonifolius, *Pourr.* Oblong-leaved Pondweed. July.
Ponds and streams; common.

P. crispus, *L.* Curled Pondweed. June and July.
Ponds and slow streams; frequent: Freshwater; Carisbrooke; Brighstone; Sandown; Bembridge.

P. densus, *L.* Close-leaved Pondweed. June and July.
Streams and pools; common.

P. pusillus, *L.* Small Pondweed. June and July.
Ponds and ditches; not common: Easton Marshes; Brading Marshes.

P. pectinatus, *L.* Fennel-leaved Pondweed. June and July.
Ponds and streams; not common: Easton Marshes; Barnfield;
Brading Marshes; Sandown Fort.

P. flabellatus, *Bab.* (*P. interruptus*, *Kit.*). June and July.
Slow streams; rare: Easton Marshes; Yarmouth Marshes; Brading Marshes.

Zannichellia palustris, *L.* Common Horned Pondweed. May to August. Pools and ditches; common.

Ruppia maritima, *L.* Greater Tassel-grass. July and August.
Brackish pools and ditches; rare: ditches at Newtown.

R. rostellata, *Koch.* Smaller Tassel-grass. June to August.
Brackish pools and ditches; rare: Yarmouth; Freshwater; Brading.

Zostera marina, *L.* Common Grass-wrack. July and August.
Sandy and muddy shores and creeks; common.

Var. angustifolia, *Hornem.*: common.

Z. nana, *Roth.* Dwarf Grass-wrack. July and August.
Same situations as *Z. marina*: Freshwater District; Wootton Bridge; Ryde sand-head; Brading Harbour.

ALISMACEAE

Triglochin palustre, *L.* Marsh Arrow-grass. June and July.
Wet meadows; common.

T. maritimum, *L.* Seaside Arrow-grass. July and August.
Salt-marsh meadows; very common.

Alisma Plantago, *L.* Great Water Plantain. June to August.
Ponds and streams; common.

A. ranunculoides, *L.* Lesser Water Plantain. June to August.
Pools and ditches; not uncommon: Freshwater Gate; Yarmouth; Goldens Common; Hamstead Brickfield; Lashmere Pond; Chil-lerton; Godshill; above Sheat; Sandown Level.

Butomus umbellatus, *L.* Flowering Rush. June and July.
Slow streams; very rare: Freshwater Gate; near Pan Common (formerly).

HYDROCHARIDACEAE

Hydrocharis Morsus-ranae, *L.* Frog's-bit. July and August.
Pools; very rare: between Freshwater and Norton. Not native.

Stratiotes Aloides, *L.* Water Soldier. July.
Very rare: near Sandown Waterworks. Not even naturalized.

The last two plants, together with *Villarsia*, were planted by Dr. Bell Salter in a pool at Barrett's, between Ryde and Brading.

Anacharis Alsinastrum, *Bab.* (*Elodea canadensis*, *Michx.*).

Water Thyme. July to September. Streams and pools; generally distributed. The variation through a series of years in the abundance of this plant, which was probably introduced to this country about 1840, is remarkable. In 1864, and for some years after, it choked mill-ponds and streams near Newport, but gradually it decreased, and by 1880 had ceased to be the prevailing plant in the ponds in this locality, and almost disappeared in succeeding years. It is now (1908) making some progress again.

ORCHIDACEAE

Aceras anthropophora, *R.Br.* Green Man Orchis. June.

Dry chalky pasture; very rare: Shanklin Down (1905, E. H. White).

Orchis pyramidalis, *L.* Pyramidal Orchis. June and July.

Dry pastures and downs; local: Freshwater; Yarmouth; Calbourne; Carisbrooke; Egypt; West Cowes; East Cowes; Pan Down; Arreton Down; Binstead; Blackgang to Bonchurch; Ventnor; Bembridge Down.

O. ustulata, *L.* Dwarf Orchis. June.

Chalky pastures; rare: Freshwater; Apes Down; Carisbrooke Castle; Ashley Down; Brighstone; St. Boniface Down; Tolt; Gatcombe.

O. Morio, *L.* Green-winged Meadow Orchis. May and June.

Meadows; not uncommon: Yarmouth; Apes Down; Cowes; Newport; Rookley; Ryde; Wootton; Niton; Whitwell; St. Helens.

O. mascula, *L.* Early Purple Orchis. May and June.

Thickets, meadows, and shady places; common.

O. incarnata, *L.* Marsh Orchis. May and June.

Wet peaty meadows; frequent: Easton Marsh; Totland Bay; Wilderness; Steephill; near Bonchurch.

O. latifolia, *L.* Broad-leaved Marsh Orchis. May and June.

Wet meadows and bogs; not uncommon: Freshwater; Calbourne; Luccombe; Sandown; &c.

O. maculata, *L.* Spotted Palmate Orchis. May and June.

Meadows, thickets, and heaths: common.

Gymnadenia conopsea, *R.Br.* Fragrant Orchis. June and July.

Chalky pastures and heaths; not common: Freshwater; Apes Down; Steephill; Rocken End; Pan Down; Carisbrooke Castle.

Habenaria viridis, *R.Br.* Green Habenaria. Frog Orchis.

June and July. Pastures; very rare: Swainston; Long Lane.

H. bifolia, *R.Br., Bab.* Lesser Butterfly Orchis. June and July.

Woods and wet turfy bogs; rather rare: Colwell Heath; Stroud Wood; Luccombe Down; near Shanklin.

H. chlorantha, *Bab.* (*H. virescens*, *Druce*). Great Butterfly

Orchis. May and June. Woods and thickets; frequent: Thorley; Swainston; Quarr; &c.

Ophrys apifera, *Huds.* Bee Orchis. June and July.

Pastures on chalk; frequent, and in some years abundant: Freshwater; Carisbrooke; St. Lawrence; &c.

O. aranifera, *Huds.* (*O. sphegodes*, *Mill.*). Spider Orchis.

May and June. Chalk or limestone pastures; very rare: Bonchurch; Luccombe Landslip; Cowleaze.

O. muscifera, *Huds.* Fly Orchis. May and June.

Chalky pastures; frequent: Swainston; Westover; Gurnard; Carisbrooke; Tolt; Combley; Quarr; &c.

Spiranthes autumnalis, *Rich.* (*S. spiralis*, *C. Koch*). Fragrant Lady's Tresses. August and September. Downs and pastures; not common: Freshwater; Colwell; St. George's Down; Mount Joy; Carisbrooke Castle; Chale; St. Lawrence.

Listera ovata, *R.Br.* Tway-blade. May and June.

Copses and shady places; rather common: Calbourne; Tolt; Gatcombe; Cowes; Quarr; &c.

Neottia Nidus-avis, *Rich.* Bird's-nest Orchis. May and June.

Shady woods; not common: Swainston; Great Whitcombe; Quarr; Barton Wood; Bordwood Copse; Westridge Copse; &c.

Epipactis latifolia, *All., Benth.* (*Helleborine latifolia*, *Druce*).

Broad-leaved Helleborine. July and August. Moist woods; not uncommon: Swainston; Westover; Slucombe Copse; Tolt; Quarr Copse; Alverstone (Whippingham); Kingston; Luccombe.

E. media, *Fries* (*H. media*, *Druce*). Narrow-leaved Helleborine.

July and August. Woods; rather rare: copses between Binstead and Wootton; Cowpit-cliff Wood, near Shanklin; Landslip.

E. palustris, *Crantz* (*H. longifolia*, *All.*). Marsh H. July and Aug.

Boggy meadows and wet ground; not common: Colwell; Easton; Totland Bay; Cranmore Farm; near Compton Farm; between Shanklin and Godshill; Luccombe; Landslip.

Cephalanthera grandiflora, *S.F. Gray*. Large White H. June.

Woods on chalk; very rare: Westover; Newbarn; Carisbrooke Castle; St. Lawrence.

IRIDACEAE

Gladiolus illyricus, *Koch*. Lesser Gladiolus. July.

Heathy ground; very rare: Apse Farm; Lake Common; Black Pan Common.

Iris foetidissima, *L.* Foetid Iris. Gladdon. June and July.

Dry hedge-banks and woods; common.

Var. citrina, *Syme*: near Yarmouth; near Steephill.

I. Pseudacorus, *L.* Yellow or Water Flag. June and July.

Marshy meadows; common.



H. F. Poole, photo.

MARSH HELLEBORINE (*EPIPACTIS PALUSTRIS*)
photographed in situ, Luccombe.

AMARYLLIDACEAE

Narcissus Pseudo-narcissus, *L.* Daffodil. Lent Lily. March and April. Damp copses and meadows; local, but abundant where found: Freshwater; Swainston; Whitecroft; Chillerton; between Godshill and Newport; Quarr; &c.

Var. Bromfieldii, *Syme*: naturalized: Apse Farm.

N. biflorus, *Curt.* Primrose Peerless. April and May. Copses and meadows; rare; naturalized: Freshwater; Thorley Copse; Gurnard Bay; Hornhill Copse; Place Farm; Wilmingham; Debbourne; Priory Farm; Wootton District; Alverstone; Steephill.

Galanthus nivalis, *L.* Snowdrop. February and March. Hedge-banks and thickets; possibly introduced in some of the localities; not common: Freshwater; Snowdrop Lane, Gatecombe; Chillerton; near Champion; King's Quay; Shorwell; Blackgang; Brading; Nunwell.

DIOSCOREACEAE

Tamus communis, *L.* Black Bryony. May to July. Hedges and thickets; common.

LILIACEAE

Asparagus officinalis, *L.* (*A. maritimus*, *L.*). Asparagus. June to August. Waste places and seashores; doubtless always escapes: Norton Spit; Freshwater; Wootton River; beach between Ryde and Binstead; St. Helens.

Ruscus aculeatus, *L.* Butcher's Broom. March and April. Woods and bushy places; rather common.

Tulipa sylvestris, *L.* Tulip. April and May. Damp pastures; very rare; doubtless introduced: Hardingshute Farm (1846).

Ornithogalum umbellatum, *L.* Star of Bethlehem. May. Meadows and orchards; rare; probably introduced: Afton; Newbarn Hummit; Shalfleet; Northwood Park; Steephill; Newchurch; Bembridge.

Scilla autumnalis, *L.* Autumnal Squill. August and Sept. Dry gravelly and sandy ground near the sea; very rare: St. Helens Spit.

S. verna, *Huds.* Vernal Squill. April and May. Pastures; very rare: near Newport; Brading. Has not been found for many years.

S. nutans, *Sm.* (*Endymion non-scriptum*, *Garcke*). Wild Hyacinth. Bluebell. May. Woods and hedge-banks; common.

Allium vineale, *L.* Crow Garlick. June and July.

Meadows and waste ground; not common: Freshwater; east side Medina, between Newport and East Medina Mill; Undercliff; &c.

A. oleraceum, *L.* Streaked Field Garlick. July and August.

Dry grassy borders of fields; very rare: Steephill; St. Lawrence.

A. ursinum, *L.* Broad-leaved Garlick. Ramsons. May & June.

Damp copses and hedge-banks; not uncommon: Gatecombe; Long Lane; &c.

Narthecium ossifragum, *Huds.* Bog Asphodel. July and Aug.

Bogs and heaths; not uncommon: Freshwater; Wilderness; Munsley Moors; Bleak Down; Alverstone Lynch; Lake Common; Blackpan; Blackwater Marsh; Marvel Marsh.

Colchicum autumnale, *L.* Meadow Saffron. Sept. and Oct.

Damp meadows; rare: field by the Medina above Shide Bridge (many years ago); garden of Blackwater House (abundantly without cultivation).

JUNCACEAE

Luzula Forsteri, *DC.* Narrow-leaved Hairy Wood Rush. April and May. Woods and hedge-banks; common.

L. pilosa, *Willd.* Broad-leaved Hairy Wood Rush. Apr. & May. Woods and hedge-banks; less common: Quarr; Firestone Copse; &c.

Hybrid: **L. Borreri**, *Bromf.* = *L. Forsteri* × *L. vernalis*: Quarr Copse; Apse Castle; Brading.

L. sylvatica, *Gaudin.* Great Wood Rush. April and June.

Woods; rather rare: Little Standen Wood; Shanklin and Cook's Castle Woods; Cowpit-cliff Wood; Hungerbury Copse; Apse; Parsonage Lynch, Newchurch.

L. campestris, *DC.* Field Wood Rush. April and May.

Meadows and waste ground; very common.

L. multiflora, *Lej.* Many-headed Wood Rush. May and June.

Heaths and woods; common. The form *congesta* is recorded for Colwell Common; Calbourne District; Wootton District; Moortown, Shorwell; &c. The form *umbellata* is recorded for all the districts.

Juncus maritimus, *Lam.* Lesser Sharp Sea Rush. July & Aug. Salt marshes; common.

J. conglomeratus, *L.* Common Rush. June and July.

Wet meadows and bogs; common.

J. effusus, *L.* Soft Rush. July and August.

Same situations as *conglomeratus*; very common.

Hybrid: **J. diffusus**, *Hoppe.* = *J. effusus* × *J. glaucus*. Diffuse Rush. Same situations as *conglomeratus*; rare: Newport and Yarmouth road; Alum Bay; hedge corner (Parkhurst Forest).

- J. glaucus**, *Ehrh.* (*J. inflexus*, *L.*). Hard Rush. July.
Wet pastures and waste ground; common.
- J. obtusiflorus**, *Ehrh.* (*J. subnodulosus*, *Schrank*). Blunt-flowered Rush. July to September. Wet meadows and bogs; rare: Freshwater; Blackgang; Niton; Sandown Bay.
- J. acutiflorus**, *Ehrh.* Sharp-flowered Rush. July and August. Wet meadows and heaths; very common.
- J. lamprocarpus**, *Ehrh.* Shining-fruited Rush. July and Aug. Wet meadows and margins of pools; very common. The floating form *subverticillatus* is common.
- J. supinus**, *Moench.* Lesser Jointed Rush. July and August. Wet wastes; common.
- J. bufonius**, *L.* Toad Rush. July and August. Wet sandy and muddy places; very common.
- J. Gerardi**, *Lois.* Mud Rush. June to August. Salt marshes and wastes; common.
- J. compressus**, *Jacq.* Round-fruited Rush. June to August. Wet places; rare: Freshwater salt marsh.
- J. squarrosus**, *L.* Moss Rush. Heath Rush. June and July. Wet heaths, especially on sandy soil; locally common: Bleak Down; the Wilderness; Rookley; Blackgang.

CYPERACEAE

- Cyperus longus**, *L.* Sweet Cyperus. August and September. Wet meadows, and marshes; very rare: Apes Down (1894); meadow west of Carisbrooke Castle (1839) (? extinct in both these localities); Niton.
- Cladium Mariscus**, *R. Br.* Prickly Twig Rush. July. Wet bogs; very rare: Easton Bog (recorded in 1841; probably now extinct).
- Rynchospora alba**, *Vahl.* White Beak Rush. July and August. Spongy bogs; very rare: Lake Common.
- Eleocharis palustris**, *Roem.* Marsh Club Rush. June. Wet meadows and other wet places; common.
- E. uniglumis**, *Schultes.* Link's Club Rush. June and July. Marshes near the sea; very rare: Freshwater.
- E. multicaulis**, *Sm.* Many-stemmed Club Rush. June and July. Boggy ground; not uncommon: Freshwater; Northwood District; Wootton District; Lake Common; Bleak Down; Blackpan; Lynn Pits; St. Helens Green.
- Scirpus pauciflorus**, *Lightf.* Chocolate-headed C.R. June to Aug. Boggy heaths; not common: Colwell Heath; near Yarmouth; St. Helens Green.
- S. fluitans**, *L.* Floating Club Rush. June and July.

Pools and streams, particularly on boggy heaths; frequent: Newtown; the Wilderness; Staplers; Lake; Borthwood; Winford.

S. Savii, *Seb. & Maur.* (*S. filiformis*, *Savi*). July and August.

Wet places near the sea; not uncommon: Colwell Heath; Brighstone (form *monostachys*); Niton; Blackgang; below Niton (form *monostachys*); near Landguard Farm (form *monostachys*); Sandown Bay; St. Helens Green; Briddlesford Heath; Lane End, Bembridge (form *monostachys*).

S. setaceus, *L.* Bristle-stalked Club Rush. July and August.

Damp sandy and gravelly places; common.

S. Tabernaemontani, *Gmel.* = *S. glaucus*, *Sm.* Lesser Bulrush. June and July. Streams and ponds near the sea; not uncommon: Freshwater; Yarmouth; Gurnard Bay; Brading.

S. maritimus, *L.* Salt-marsh Club Rush. July and August.

Salt marshes; common.

S. sylvaticus, *L.* Wood Club Rush. June and July.

Wet places by streams; local: Newport; Combley; Sandown Level; Horringford; Stickworth; Youngwoods Copse; between Merry Garden and Cheverton Farms; Roud; between Bridge and Bagwich; Newchurch; between Mersley and Langbridge; Sandown Marshes; Alverstoke; Monkton Mead; Shanklin.

Eriophorum angustifolium, *Roth.* Common Cotton-grass. May and June. Bogs; frequent: Wilderness; &c.

E. latifolium, *Hoppe* (*E. polystachion*, *L.*). Rough-stalked Cotton-grass. May and June. Boggy meadows; very rare: Colwell Heath (1841; probably now, 1908, extinct).

Carex pulicaris, *L.* Flea Sedge. May and June.

Wet pastures; not uncommon: Freshwater Bay; Colwell; Cockleton; Bleak Down; Marvel; Smallgains; Long Lane; Lake; Blackpan; St. Helens.

C. divisa, *Huds.* Bracteated Marsh Sedge. April to June.

Pastures near the coast; not uncommon: Freshwater; Yarmouth; near Burnt Wood; Gurnard; Newtown; Medina above Cowes; Wootton; Quarr; Springfield; Bembridge.

C. disticha, *Huds.* Soft Brown Sedge. May and June.

Wet meadows and sides of streams; not uncommon: Freshwater; Cockleton; Brighstone; Brading Harbour.

C. arenaria, *L.* Sea Sedge. May and June.

Sandy shores; local: Saltmead Bay; between Shorwell and Haslett; Blackgang; Sandown Bay; Bembridge; St. Helens.

C. teretiuscula, *Good.* (*C. diandra*, *Schrank*). Lesser Panicked Sedge. June. Boggy meadows and ditch banks; very rare: Freshwater; Wilderness.

C. paniculata, *L.* Greater Panicked Sedge. May and June.

Boggy woods, willow beds, and sides of streams; common: Wilderness; Knighton; Lake Common; Newchurch; &c.

C. vulpina, *L.* Great Sedge. May and June.

Wet woods, &c.; common.

C. muricata, *L.* Great Prickly Sedge. May and June.
Dry gravelly and sandy pastures and wastes; common.

C. divulsa, *Stokes.* Grey Sedge. May and June.
Dry hedge-banks and shady places; common.

C. stellulata, *Good.* (*C. echinata*, *Murr.*). Little Prickly Sedge.
May and June. Boggy places, and wet woods and heaths; very common.

C. remota, *L.* Distant-spiked Sedge. May and June.
Shady damp woods and hedge-banks; common.

C. axillaris, *Good.* Axillary Sedge. May and June.
Moist copses and meadows; rare: Freshwater; Quarr; Little Smallbrook.

C. Boeninghausiana, *Weihe.* Boeninghausen's Sedge. June.
Shady damp woods; very rare: Newchurch.

C. canescens, *L.* White Sedge. June.
Boggy ground; rare: Rookley Moors; Lake Common; Sandown.

C. ovalis, *Good.* Oval-spiked Sedge. June.
Heaths, pastures, and open spots in woods; common.

C. acuta, *L.* (*C. gracilis*, *Curt.*). Slender-spiked Sedge. June.
Sides of streams; rare: Sandown Marshes.

C. caespitosa, *Sm.* (*C. Goodenowii*, *Gay*). Common Sedge. April to June. Wet meadows and banks; very common.

C. glauca, *Scop.* (*C. flacca*, *Schreb.*). Glaucous Heath S. June.
Pastures, downs, heaths, and commons; very common.

C. pilulifera, *L.* Round-headed Sedge. April and May.
Wet heaths and boggy ground; not uncommon: Parkhurst Forest; between Ryde and Wootton; Apse Castle; Lake Common; Whitwell.

C. praecox, *Jacq.* (*C. caryophyllea*, *Lat.*). Vernal S. Apr. & May.
Heaths, banks, and pastures; very common.

C. pallescens, *L.* Pale Sedge. May and June.
Heaths, woods, and rough meadows; local: Ningwood; Medina Valley; Firestone Copse; near Wootton Bridge; Dunnage Copse; Stroud Wood; wood near Ryde.

C. panicea, *L.* Pink-leaved Sedge. May and June.
Wet heaths and pastures; common.

C. pendula, *Huds.* Great Pendulous Sedge. April and May.
Moist woods and ditch sides; locally common: copses between Gurnard and Thorness; Sheat Farm; Wootton River; Marina Copse; Shanklin; Ventnor; Hungerberry Copse, near Shanklin; Foreland; Steyne Wood.

C. strigosa, *Huds.* Loose Pendulous Sedge. May.
Damp woods and hedge-banks; rare: Swainston; Little Smallbrook; Combley.

C. sylvatica, *Huds.* Pendulous Wood Sedge. May.
Damp woods; common.

C. laevigata, *Sm.* (*C. helodes*, *Link.*). Smooth-stalked Sedge.
May and June. Woods; common.

C. binervis, *Sm.* Green-ribbed Sedge. April and May. Heaths, moors, and woods; local and not abundant: Parkhurst Forest; Newport; Bleak Down; New Copse; Briddlesford Heath; Blackpan; Tinker's Hole; Apse Castle.

C. distans, *L.* Loose Sedge. June.

Salt marshes and wastes; common.

C. fulva, *Host.* Tawny Sedge. June.

Wet pastures and bogs; local: Freshwater; Colwell; Briddlesford; Lynn Farm.

C. extensa, *Good.* Long Bracteated Sedge. June.

Salt marshes and wastes; local: Yar banks; Newtown; between Cowes and Newport; Wootton River; St. Helens Spit.

C. flava, *L.* Yellow Sedge. May and June.

Marshes and wet meadows; common.

C. hirta, *L.* Hairy Sedge. April and May.

Marshes and wet wastes; common.

C. Pseudo-cyperus, *L.* Cyperus-like Sedge. May and June.

Sides of streams, and in woods; not common: near Ryde; Freshwater marshes; Centurion's Copse; copse near Sandown.

C. paludosa, *Good.* (*C. acutiformis*, *Ehrh.*). Lesser Pond Sedge. April and May. Marshes and wet wastes; common.

Var. Kochiana, *Gaud.*: Sandown Marshes.

C. riparia, *Curt.* Greater Pond Sedge. May.

Marshes and sides of streams; not common: Freshwater; Yar banks; banks of stream above Carisbrooke; Wootton River; between Niton and Whitwell; Alverstone.

C. ampullacea, *Good.* (*C. inflata*, *Huds.*). Bottle Sedge. April and May. Bogs and borders of ponds; not common: Freshwater; Wilderness; Sandown Level; Lake Common; Newchurch; Apse Heath.

GRAMINEAE

Digitaria sanguinalis, *Beauv.*

Has occurred as a casual only.

Echinochloa Crus-galli, *Beauv.*

A single plant was found at Freshwater in 1869.

Spartina stricta, *Roth.* Twin-spiked Cord-grass. July to Sept.

Muddy salt marshes; not uncommon: Freshwater; Yarmouth; Newtown; Medina between Cowes and Newport; Wootton Bridge; King's Quay.

S. Townsendi, *H. & J. Groves.* Townsend's Cord-grass. August and September. Mud flats covered by sea at high water in tidal rivers. This recently discovered species is apparently rapidly increasing, and is believed to be supplanting *S. stricta*. Near Yarmouth; Freshwater; Werrar, near Newport; East Medina Mill; King's Quay; Wootton; Quarr; Bembridge.

Setaria viridis, *Beauv.* Green Bristle-grass. July and August. Sandy fields and wastes; rare; doubtless introduced: railway at Shide; garden at West Cowes; field between Sandown Church and Pan Common.

S. glauca, *Beauv.* Yellow Bristle-grass. One plant at Alverstone, Whippingham (1869).

Anthoxanthum odoratum, *L.* Sweet-scented Vernal-grass. May and June. Meadows, woods, &c.; very common.

Phalaris arundinacea, *L.* Common Reed-grass. June & July. Ponds and sides of streams; common.

P. canariensis, *L.* Canary-grass. July. Waste ground; uncommon; scarcely naturalized: Freshwater Bay; Niton; Sandown Fort.

Alopecurus agrestis, *L.* (*A. myosuroides*, *Huds.*). Slender Fox-tail grass. April to November. Cultivated fields; common.

A. geniculatus, *L.* Floating Fox-tail Grass. May to July. Wet places in meadows; common.

A. bulbosus, *Gouan.* Bulbous Fox-tail Grass. July. Salt-marsh meadows and waste ground near the sea; rare: between Yarmouth and Thorley; Yarmouth Railway Station; Monkton Meads, Ryde; Bembridge; Brading; between Brading and Sandown.

A. pratensis, *L.* Meadow Fox-tail Grass. April to June. Pastures, roadsides, &c.; common.

Phleum pratense, *L.* Com. Cat's-tail Grass. June to October. Meadows and borders of fields; common.

P. arenarium, *L.* Sand Timothy Grass. May and June. Sandy pastures and wastes by the sea; very rare: Norton.

Gastridium lendigerum, *Gaud.* Nit-grass. June. Cultivated fields and waste ground; not common: Freshwater; Wootton; Niton; Bembridge; &c.

Polypogon monspeliensis, *Desf.* Fox-tail. June and July. Marshes and wastes near the sea; very rare: Norton (1868; not noted since).

Agrostis setacea, *Curtis.* Bristle-leaved Bent-grass. July. Dry heaths, commons, and downs, on sandy or gravelly soil; common.

A. canina, *L.* Brown Bent-grass. July and August. Moist woods, meadows, and heaths; common.

A. alba, *L.* Marsh Bent-grass. July. Moist borders of fields and wastes; very common.

A. vulgaris, *With.* (*A. nigra*, *With.*). Com. Bent-grass. July. Rough pastures and dry wastes; common.

Var. pumila, *L.*: The Warren, Alum Bay; St. George's Down. **Ammophila arundinacea**, *Host.* (*A. arenaria*, *Link.*). Common Marram or Mat-reed. July. Loose sand by the sea; local: Norton Spit; Saltmead Bay; Ryde; Sandown; St. Helens Spit.

Calamagrostis epigeios, *Roth.* Wood Small Reed. June.

Hedges and thickets on wet ground; not uncommon: Yarmouth; Parkhurst; Thorness; Ryde; &c.

C. lanceolata, *Roth* (*C. canescens*, *Druce*). Purple-flowered Small Reed. July. Boggy ground; very rare: Knighton; Newchurch.

Arundo Phragmites, *L.* (*Phragmites communis*, *Trin.*). Common Reed. August. Ponds and sides of streams, wet meadows, &c.; common.

Var. nigricans, *Dumort*: Yarmouth.

Var. repens: Yar (Freshwater) salt marshes; Puckaster Cove; ditch between Sandown Bay and Lower Morton Farm; Sandown Bay; Bembridge.

Milium effusum, *L.* Millet-grass. May and June. Moist shady woods; locally abundant: Bloodstone Copse; Cowpit-cliff Copse; hanger under Dunnose; copses between Shanklin and Bonchurch; Knighton East Wood; under Arreton and Mersley Downs; Wroxall Farm; Tolt Copse.

Aira caespitosa, *L.* Turfy Hair-grass. June and July. Moist pastures and woods; common.

A. flexuosa, *L.* Wave Hair-grass. June and July. Dry heathy pastures and open woods; not uncommon: St. George's Down; Royal Heath; Apse Castle.

A. caryophylla, *L.* Silvery Hair-grass. May. Dry sandy pastures, heaths, and banks; common.

Var. patulipes = *A. patulipes*, *Jord.* (*Syme*): St. Helens Spit.

A. praecox, *L.* Early Hair-grass. April and May. Dry pastures, heaths, and banks; common.

Trisetum flavescens, *Beauv.* Yellow Oat-grass. July. Pastures and roadsides; common.

Avena pubescens, *Huds.* Downy Oat-grass. July. Pastures, downs, &c.; not uncommon: Freshwater; Calbourne District; Carisbrooke Castle; St. Boniface Down; Luccombe; Niton; Rocken End; Brading; &c.

A. pratensis, *L.* Meadow Oat-grass. June. Dry pastures, heaths, and downs; common on the Chalk.

A. strigosa, *Schreb.* Bristle-pointed Oat. July. Cultivated fields; not common; introduced: St. John's turnpike gate, Ryde (1835); Steephill.

A. fatua, *L.* Wild Oat. July. Cultivated fields and waste ground; common; probably introduced.

Arrhenatherum avenaceum, *Beauv.* (*A. elatius*, *Mert.*). False Oat-grass. June. Pastures, hedge-banks, &c.; very common.

Var. nodosum, *Reichb.* = *A. bulbosum*, *Presl.* Common.

Holcus mollis, *L.* Creeping Soft-grass. July. Woods, heaths, and shady places; common.

H. lanatus, *L.* Meadow Soft-grass. June and July. Pastures, hedges, woods, &c.; very common.

Triodia decumbens, *Beauv.* (*Sieglingia decumbens*, *Bernh.*). Decumbent Heath-grass. June and July. Pastures, heaths, roadsides, &c.; common.

Koeleria cristata, *Pers.* Crested Hair-grass. June and July. Chalk downs and sandy pastures; local: Freshwater; Westover Down; Newport District; downs towards Freshwater; Red Cliff to Rocken End; Bembridge; Yaverland and Brading Downs; Sandown Bay; St. Helens Spit.

Var. albescens, *DC.*: should be looked for in sandy ground by the sea.

Var. gracilis, *Boreau*: St. Catherine's Point; Rocken End.

Molinia coerulea, *Moench.* Purple Melic-grass. July and Aug. Wet heaths and bogs; common.

Var. atrovirens: Parkhurst Forest; Wilderness.

Melica nutans, *L.* Wood Melic-grass. May and June. Shady woods and hedges; common.

Catabrosa aquatica, *Beauv.* Water Whorl-grass. May to July. Shallow pools and streams; local: N. of Freshwater Farm; Pan fields; Clatterford; Appuldurcombe Park; Sandown Level; Horringford; Foreland; Langbridge; Brading; Bembridge.

Glyceria fluitans, *R.Br.* Floating Meadow-grass. June to Sept. Ponds and slow streams; common.

G. plicata, *Fries.* Folded-leaved Fl. Meadow-grass. June to Sept. Same situations as *G. fluitans*; common.

Hybrid: **G. pedicellata**, *Towns.* = *G. plicata* × *G. fluitans*. Barren Floating Meadow-grass. June to September. Same situations as *G. fluitans*, but principally by running water; not uncommon: Yar, near Freshwater; Calbourne; pond between Cowes and Newport; Brighstone; Niton; Horringford; Brading.

G. aquatica, *Wahl.* Reed Meadow-grass. July. Margins of ponds and streams; very rare: Colwell (? extinct).

G. maritima, *Mert. & Koch.* Creeping Sea M.-grass. June & July. Salt marshes and muddy places near the sea; common.

G. distans, *Bab.* Reflexed Meadow-grass. June to August. Salt marshes and sea-side wastes; rather rare: between Yarmouth and Thorley; Yarmouth; Norton; Newtown; between West Cowes and Newport; Binstead; Pelham fields; St. Helens; Brading; Monkton Meads, Ryde.

G. Borreri, *Bab.* Borrer's Meadow-grass. June to August. Muddy salt marshes and sea-side wastes; local: Freshwater; Newtown; S. of West Cowes; Monkton Meads, Ryde; King's Quay; Brading Harbour; Bembridge; Sea View.

G. procumbens, *Dumort* (*Sclerochloa procumbens*, *Beauv.*). Pro-cumbent Meadow-grass. June and July. Muddy salt marshes and seaside wastes; not uncommon: Freshwater; Newtown; Cowes; Medina below Newport; Monkton Meads; Sea View; Brading Harbour; St. Helens Spit.

Poa annua, *L.* Annual Meadow-grass. March to September.
Meadows and waste places; very common.

P. bulbosa, *L.* Bulbous Meadow-grass. April and May.
Dry sandy pastures and wastes by the sea; very rare: St. Helens Spit.

P. nemoralis, *L.* Wood Meadow-grass. June and July.
Shady banks, woods and thickets; very rare: between Brook Church and Compton Farm; Sandrock.

P. compressa, *L.* Flat-stemmed Meadow-grass. July.
Wall tops and dry fields; rare: near Rowledge Barn; Chantry House, Newport (formerly); Apes Down; Shide Mill.

P. pratensis, *L.* Smooth-stalked Meadow-grass. June & July.
Pastures, wall tops, and waste places; common.

Var. angustifolia, *Gaud.*: woods and shady places.

Var. subcoerulea, *Gaud.*: wall tops, and in dry stony and sandy ground.

P. trivialis, *L.* Rough-stalked Meadow-grass. June and July.
Moist meadows and shady wastes; common.

Briza media, *L.* Common Quaking-grass. June.
Pastures, grassy roadsides, &c.; common.

B. minor, *L.* Small Quaking-grass. July.
Cornfields and wastes; local; introduced: Freshwater District; between Quarr Abbey and Fishhouse; Alverstone, Whippingham; Wootton Creek.

Cynosurus cristatus, *L.* Crested Dog-tail Grass. July & Aug.
Pastures, roadsides, &c.; very common.

Dactylis glomerata, *L.* Rough Cock's-foot Grass. June & July.
Pastures, hedges, and woods; very common.

Festuca uniglumis, *Sol.* (*F. membranacea*, *Druce*). Single-glumed Fescue-grass. May and June. Sandy ground near the seashore; very rare: St. Helens Spit.

F. ambigua, *Le Gall.* Fringed Fescue-grass. June.
Loose blown sand by the seaside; very rare: St. Helens Spit.

F. Myuros, *L.* Wall Fescue. June and July.
Walls and waysides; rare: Thorley; Easton; Compton Bay; East Cowes; Newport; Niton; Woolverton, Shorwell.

F. bromoides, *L.* Barren Fescue-grass. May and June.
Sandy pastures, dry banks, and waste ground; very common.

F. ovina, *L.* Sheep's Fescue-grass. June.
Dry pastures, waysides, walls, &c.; very common.

F. rubra, *L.*, *Bab. Man.*, *Gren. & Godr.* June.
Dry pastures, waste ground, and on the sea coast; common; very variable.

Var. acutifolia: St. Helens Spit.

F. elatior, *L.* Tall Fescue-grass. June and July.
Wet pastures, sides of streams, and banks by the sea; not uncommon.

Var. arundinacea, *Schreb.*: wet banks by the sea: Yarmouth;

Alum Bay; Colwell Bay; Gurnard Bay; Niton; Steepphill Cove; Bonchurch Cove; Luccombe Chine; Sandown Bay; Shanklin cliff; Bembridge; Whitecliff Bay.

Var. dubia, *Hack.* (ad interim): near Steepphill.

F. pratensis, *Huds.* Meadow Fescue-grass. June and July. Moist meadows and roadsides; not uncommon: Freshwater District, and in the southern districts of the Island.

Var. loliacea: Freshwater.

F. rigida, *Kunth.* (*Sclerochloa rigida*, *Link.*). Hard Meadow-grass. June. Dry ground, rocks, walls, cliffs, &c.; common.

Sclerochloa loliacea, *Woods.* Dwarf Sea Fescue. June & July. Dry sandy ground and seaside waste; rather uncommon: Yarmouth; Freshwater Downs; Compton; St. Catherine's Point; St. Helens; cliffs between Bonchurch and Ventnor; Steepphill Cove; Sandown; Brading.

Bromus giganteus, *L.* (*Festuca gigantea*, *Vill.*). Tall Brome-grass. July. Moist woods and hedge-banks; not uncommon: Freshwater District; Calbourne; Newport; Ryde; Quarr; Yarmbridge; Niton; Newchurch; Shanklin Chine; Appuldurcombe.

B. asper, *Murr.* (*B. ramosus*, *Huds.*). Hairy Wood Brome-grass. July. Woods and hedges; very common.

B. erectus, *Huds.* Upright Perennial Brome-grass. June & July. Dry pastures and banks; rare: above Newtown; Luccombe; Bonchurch.

B. sterilis, *L.* Barren Brome-grass. June. Walls and dry banks; very common.

B. secalinus, *Bab.* Rye Brome-grass. June and July. Cornfields and waste ground; local: Whitcombe; Play St. Farm; Nunwell; coast at Ryde; Haslett Farm; Redhill.

B. racemosus, *Parl.* Racemose Brome-grass. June. Pastures; locally abundant: Freshwater; Calbourne; near Ryde; Niton; Newchurch; Sandown Marsh; Brading; Alverstone; Godshill; &c.

B. commutatus, *Bab.* Confused Brome-grass. June and July. Cultivated fields, meadows, and roadsides; local: Shalfleet; near Parkhurst; Medina below Cowes Cemetery; Ryde; Wootton; Bembridge; St. Helens.

B. mollis, *L.* (*B. hordeaceus*, *Gren. & Godr.*). Soft Brome-grass. May and June. Pastures, cultivated fields, and wastes; very common.

Var. glabrescens: between Shorwell and Kingston; St. Helens Spit.

Var. Ferronii, *Mabille*: Freshwater Cliffs; Culver Cliffs.

B. arvensis, *Godr.* Field Brome-grass. July and August. Cultivated fields and roadsides; rare: amongst sown grass at Niton.

Brachypodium sylvaticum, *R. & S.* Wood Fescue. June. Woods and hedgebanks; very common.

- Triticum repens**, *L.* Common Couch-grass. June.
Cultivated ground and wastes; common.
Var. barbatum, *Duval-Jouve*: Freshwater Bay.
Var. littorale: Newtown Marshes.
T. pungens, *R. & S.* Erect Sea Couch-grass. July.
Banks of tidal waters, and seashores; common.
Var. littorale, *Reichb.*: Freshwater; E. of Ryde; Steephill.
Var. pycnanthum, *R. & S.*: Gurnard Bay; Brading Embankment.
T. acutum, *DC.* Decumbent Sea Couch-grass. July.
Sandy seashores; common.
T. junceum, *L.* Sand Couch-grass. July and August.
Sandy seashores and wastes; local: Norton; Colwell Bay; E. of Ryde; Sandown Bay; St. Helens Spit.
Lolium perenne, *L.* Perennial Darnel. Rye-grass. June.
Pastures and roadsides, &c.; very common.
L. italicum, *Braun.* Italian Rye-grass. June.
Cultivated fields and roadsides; not uncommon: Fernhill; path from Brooklands to Binstead; Yafford; Bonchurch; near Sandown Fort.
L. temulentum, *L.* Bearded Darnel. June to August.
Cultivated fields; rare: Yarmouth; Thorley; Whitcombe; Wootton; Lake.
Lepturus filiformis, *Trin.* Sea Hard-grass. July.
Salt marshes and wastes near the sea; common.
Hordeum pratense, *Huds.* (*H. nodosum*, *L.*). Meadow Barley-grass. July. Meadows and salt marshes; common.
H. murinum, *L.* Wall Barley-grass. June and July.
Waysides, walls, and waste places; common.
H. maritimum, *With.* (*H. marinum*, *Huds.*). Seaside Barley-grass. June. Salt marshes and wastes near the sea; not uncommon: Yarmouth; Norton; Newtown; between Cowes and Newport; Springfield; Brading; St. Helens.
Nardus stricta, *L.* Mat-grass. July.
Heaths; not uncommon: Headon Hill; Bleak Down; Wilderness.

ACOTYLEDONES or CRYPTOGAMEAE

FILICES

- Pteris aquilina**, *L.* Common Bracken. July.
Woods, heaths, and rough pastures; very common.
Blechnum spicant, *With.* Hard Fern. July.

Woods and hedge-banks on wet heaths; not very common: St. George's Down; Wilderness; Brighstone; Godshill; Sandown; &c.

Asplenium Ruta-muraria, *L.* Rue-leaved Spleenwort. May to September. Old walls and rocks; rather rare: Freshwater; Calbourne; East Cowes; Spencer road, Ryde; Arreton; Niton; Ventnor; St. Lawrence; Gatchliffe; Newtown; St. Catherine's Tower.

A. Trichomanes, *L.* Maidenhair Spleenwort. May to Sept. Old walls; rare: Thorley; Carisbrooke; East Cowes; Quarr Abbey; Norris Castle; Chale; Shorwell; Mirables; near the foot of Mersley Down; Morgan Close, Combley.

A. marinum, *L.* Sea Spleenwort. June to October. Rocks on sea coast; very rare: rocks near St. Catherine's Point.

A. Adiantum-nigrum, *L.* Black Maidenhair Spleenwort. June to September. Hedge-banks, walls, and rocks; local: Newport; Ryde; Quarr; Brighstone; Kingston; Niton; St. Catherine's; Alverstone Mill; East Cowes; Knighton.

Athyrium Filix-foemina, *Roth.* Lady Fern. June and July. Moist woods, and hedge-banks; not uncommon, except on the Chalk: Freshwater; Wilderness; Moortown, Shorwell; Blackpan Common; Shanklin Chine; Newchurch; Niton.

Var. rhaeticum, *Roth*: Wilderness; Moortown.

Ceterach officinarum, *DC.* Scale Fern. April to October. Walls and rocks; rare: Carisbrooke Castle; East Cowes; Coopers, near Bembridge; windmill, Bembridge; Knowle Farm; Brading Church.

Scolopendrium vulgare, *Symons* (*Phyllitis Scolopendrium*, *Newm.*). Hart's-tongue. July and August. Woods, hedges, &c.; common.

Polystichum aculeatum, *Schott.* Prickly Shield F. July & Aug. Damp woods and hedges; very rare: near Whippingham; Little Smallbrook; Coopers, near Bembridge.

Var. lobatum: Calbourne; Woodhouse Copse; near Arreton.

P. angulare, *Presl.* Angular-leaved Shield Fern. July and Aug. Woods and shady places; common.

Lastraea Filix-mas, *Presl.* Male Shield Fern. June and July. Woods, hedges, &c.; common.

Var. Borreri, *Newm.*: Wilderness; Fattening Park Copse, &c.; Alum Bay; Niton Down; Apse Castle; copse at Weeks; Centurion's Copse.

Var. affinis, *Bab.*: "Mr. A. G. More finds it in the Island."

Var. elongata, *Moore*: copse near Bembridge Harbour.

L. spinulosa, *Presl.* Prickly Shield Fern. August and Sept. Peaty ground and moist woods; common.

L. dilatata, *Presl.* Broad Shield Fern. August and September. Woods, hedges, and heaths; common.

L. Thelypteris, *Bory.* Marsh Fern. July and August.

Boggy ground; rare: Freshwater Marsh; Cridmore; Wilderness; N.E. of Compton Grange; Newchurch; Knighton; Alverstone.

L. Oreopteris, *Presl.* (*L. montana*, *Moore*). Mountain Shield Fern. July. Heaths and woods; rare: between Guildford and Lynn Farms; Apse Castle; America Woods.

Polypodium vulgare, *L.* Polypody. August to October. Hedge-banks, &c.; common.

Osmunda regalis, *L.* Flowering Fern. July to September. Bogs and wet woods; not common: Freshwater Gate; Westover; Calbourne Mill; Wilderness (extinct in 1906); Woolverton, Shorwell; Kingston; Blackgang; Godshill; Blackpan; Lake; Sandown; Niton Undercliff; Sandown Bay.

Ophioglossum vulgatum, *L.* Adder's-tongue. May and June. Damp pastures; not common: Farringford; Easton; Thorley; near Mark's Corner; between Newbridge and Shalfleet; Northwood Park; Little Pan; North Fairlee; Smallbrook; Blackgang Chine; Nunwell Farm; foot of Bembridge Down; Steephill; Arreton Down; Kingsland; Champion; Park; Plaish; Brading; Gurnard; N. of Priory Farm, Carisbrooke.

Botrychium Lunaria, *Sw.* Moonwort. May to July. Meadows; rare: Wilderness; Nunwell; East End; Cliff Farm, Shanklin; Luccombe; Bowcombe Down; Wackland; Cook's Castle; Appuldurcombe.

LYCOPODIACEAE

Lycopodium clavatum, *L.* Club-moss. July and August. Heaths; rare: St. Boniface Down (probably extinct).

EQUISETACEAE

Equisetum arvense, *L.* Field Horse-tail. March and April. Wet arable ground and waste; common.

E. maximum, *Lam.* Great Water Horse-tail. April. Wet woods and banks; common.

E. sylvaticum, *L.* Wood Horse-tail. April and May. Wet woods; very rare: Apse Heath; Newchurch.

E. palustre, *L.* Marsh Horse-tail. June to August. Bogs and moors; not uncommon: Easton; Cockleton; Wilderness; Brighstone; Moortown; Shanklin Chine; Sandown Level; &c.

Var. polystachyum: Freshwater; between Debbourne and Gurnard; Cockleton; Wilderness.

E. limosum, *L.* Smooth Horse-tail. June and July. Pools and ditches; common.

CHARACEAE

Chara fragilis, *Desv.* Fragile Chara. June and July.
Pools; very rare: Goldens Common, Freshwater.

C. aspera, *Willd.* July to September.

Ponds and ditches; rare: between Freshwater and Norton.

C. hispida, *L.* June.

Pools and ditches; rare.

Var. horrida, *Braun*: Goldens Common, Freshwater.

C. vulgaris, *L.* June and July.

Pools, ditches, &c.; common.

Var. longibracteata, *Kuetz*: Brading.

Lamprothamnus alopecuroides, *Braun*. August.
Creeks, and salt-water ponds; very rare: Newtown.

PROTOZOA (INTRODUCTORY).

BY THE EDITOR.

It may be well to say a few words here as to the several groups of minute organisms which constitute the great sub-kingdom Protozoa.

In the first place it may be stated that the vast majority of species are of microscopic dimensions, and that their study in a systematic manner has only been rendered possible in comparatively recent times through the greater magnifying power of modern lenses.

An attempt has been made in three groups only (dealt with in the following pages) to give names of species which have been observed in the Island. This is mainly owing to want of information, but apart from this there is not quite the same object in making local lists of microscopic organisms for a "Guide" of this description as there is in better-known classes consisting of larger forms. It is, though, a matter of great interest that a large proportion of the known species of these minute creatures seem to be almost cosmopolitan in their distribution, and it has only been by making local lists in various parts of the world that this fact has been ascertained.

The many thousands of species comprised in this great division are single-celled animals of comparatively simple organization, yet in many cases marvellously beautiful in form.

The Protozoa include the *Infusoria* of varied form and habit—the delight of the student of "pond life"; the *Foraminifera* of well nigh endless variety in design, dredged in vast numbers from the ooze at the sea bottom, &c., and a favourite group with microscopists; the *Amoebae* and their allies, simplest in character of all animal forms, and specially interesting to the naturalist on that account; the *Radiolaria*, another interesting group to the student of the microscope owing to the exquisitely dainty siliceous skeletons which some of them possess and their easy preservation; and the *Sporozoa*, which are of engrossing interest to the medical profession owing to the part they play in causing diseases both in man and the vertebrate animals generally.

RHIZOPODA AND HELIOZOA.

BY S. W. PRING.

THESE two groups of microscopic creatures, in common with the other members of the division *Sarcodina*, perform most of their life-functions by means of pseudopodia. The simplest forms of the Rhizopoda (*Amoeba* and *Pelomyxa*) consist of naked, nucleated protoplasm, with or without one or more contractile vacuoles; other genera are protected by gelatinous, chitinous, or siliceous tests of various shapes, sometimes encrusted with sand-grains. The Rhizopoda are divided into *Lobosa* and *Filosa*; in the former the pseudopodia are usually blunt, in the latter slender and branching, but in neither do they unite to form a network, nor are they slender at their bases. The pseudopodia of the Heliozoa are slender and ray-like, and are stiffened by an axial rod; a typical example is the spherical *Actinophrys sol*, which resembles very fairly the conventional representation of the sun, the pseudopodia being the rays diverging from a common centre. Like the Rhizopoda, the Heliozoa may be either naked or invested with a gelatinous or siliceous covering. The contractile vacuoles in the freshwater species of the Heliozoa are superficial. Reproduction in both groups is by fission, or by brood-formation preceded by encystment. They are found in both salt and fresh water, the Rhizopoda generally amongst filamentous Algae, but also in mud and (three species) in the intestines of mammals; the Heliozoa float on the surface, or live amongst weeds.

Bibliography: Marcus Hartog, in Vol. I of the "Cambridge Natural History"; "The British Freshwater Rhizopoda," by James Cash, published by the Ray Society.

Unfortunately these groups appear to have been quite neglected in the Island, and the following list contains only the names of those species which I have noticed whilst hunting for *Infusoria*.

RHIZOPODA

Amoeba limacola.	In ponds about Newport.
A. proteus.	" "
A. villosa.	" "
Pelomyxa palustris.	" "
Arcella vulgaris.	" "
A. discoides.	" "
Centropyxis aculeata.	" "
Dactylosphaerium radiosum.	In ponds about Newport.
Diffugia sp.	" "

HELIOZOA

Actinophrys sol.	In ponds about Newport.
Actinosphaerium eichornii.	" "

FORAMINIFERA.

BY THE EDITOR.

THIS section of the Protozoa is an important one, both as regards the number of species existing at the present day, and the countless millions of individuals which must have lived in the ages that have passed and which have contributed to a very large extent in the formation of the Chalk and various other limestone formations, some of which are of great economic value.

These organisms are nearly all inhabitants of the sea: some floating on the surface, others living on the mud and sand at the bottom, whilst great numbers are cast up on all our shores.

There is great variety in form amongst these tiny creatures, some closely resembling miniature ammonites and nautiluses, others bottles, fir-cones, &c.

For literature on the subject, students should consult "Recent Foraminifera of Great Britain," Williamson, 1857; and works by Chapman, 1902, and Lister, 1903. There is also Brady's Monograph of the Foraminifera collected by the "Challenger" expedition, 1884; &c.

No local material has been collected from which a "list" can be compiled, but the few species mentioned below were found by me when picking out small Mollusca from some shell sand.

MILIOLIDAE

Miliolina seminulum, *Linn.* This species, which is whitish in appearance and a giant amongst its congeners, is sometimes found in vast numbers on certain parts of the beach at Shanklin and Brook.

M. circularis, *Bornemann.* Amongst shell sand, Brook.

Massilina secans, *D'Orbigny.* Amongst shell sand at Brook and Shanklin.

LAGENIDAE

Polymorphina lactea, *Walker & Jacob.* One specimen on the beach at Brook.

NUMMULINIDAE

Polystomella crispa, *Linn.* Several examples at Brook and Shanklin.

INFUSORIA.

BY S. W. PRING.

SAVILLE KENT, in his invaluable "Manual"—from which the following information is mainly compiled—defines the Infusoria as—

"Protozoa furnished in their adult condition with prehensile or locomotive appendages, that take the form of cilia, flagella, or of adhesive or suctorial tentacula, but not of simple pseudopodia; zooids essentially unicellular, free-swimming, or sedentary; naked, encuirassed, loricate, or inhabiting a simple mucilaginous matrix; single, or united in colonial aggregations, in which the individual units are distinctly recognizable; not united and forming a single gelatinous plasmodium, as in the Mycetozoa, nor immersed within and lining the internal cavities of a complex protoplasmic and mostly spiculiferous or other skeleton-forming cytoblastema, as in the Spongida. Food-substances incepted by a single distinct oral aperture, by several distinct apertures, through a limited terminal region, or through the entire area of the general surface of the body. Increasing by simple longitudinal or transverse fission, by external or internal gemmation, or by division—preceded mostly by the assumption of a quiescent or encysted state—into a greater or less number of sporular bodies. Sexual elements, as represented by true ova or spermatozoa, entirely absent, but two or more zooids frequently coalescing as an antecedent process to the phenomena of spore-formation."

STRUCTURE.—As the definition states, the structure of the infusorial zooids is unicellular, and not an aggregation of differentiated cells, the organs being formed by the differentiation of the protoplasm and its secretions and accretions. In the simplest type (such as most of the Pantostomata) the body, with the exception of the nucleus, consists of a continuous mass of granular, homogeneous protoplasm. In the next stage of development (certain Pantostomata and many of the Eustomata and Discostomata) the outer border or ectoplasm is somewhat more solid than the softer inner substance

or endoplasm. When we arrive at the Ciliata and some of the Flagellata (*Euglena*, *Anisonema*, and *Polytoma*) the ectoplasm has developed into a well-defined cuticular layer. In the most highly organized types there are four distinct layers outside the endoplasm. The outermost is a true cuticle, and from it are derived the dorsal shield or investing cuirass of *Euplotes* and *Peridinium*, and, as a secondary product, the loricae of *Vaginicola*, *Tintinnus*, and other Heterotricha and Peritricha.

DIMENSIONS.—Very few of the Infusoria are visible to the naked eye, and the majority are exceedingly minute. The smallest, according to Saville Kent, is *Monas vinosa*, with a length of $\frac{1}{12000}$ " , the largest *Spirostomum ambiguum*, $\frac{1}{8}$ ".

ENCYSTMENT.—Many of the Infusoria have the power of becoming perfectly quiescent, contracting into a spheroidal form, and exuding a soft mucilaginous envelope, which hardens into a transparent, shelly capsule. The encysted condition is assumed (a) as a means of protection against drought, &c., or for a rest after a full meal; (b) as a prelude to multiplication by binary division; and (c) as a preparation for multiplication by spores.

LOCOMOTIVE AND PREHENSILE APPENDAGES.—These consist of cilia—fine, short, hair-like, actively-vibratile filaments; flagella—isolated and more or less elongated cilia, either anteriorly or posteriorly developed, the former being vibratile, tugging organs, and the latter trailing filaments, by means of which the animalcule anchors itself and by the contraction of which a sudden backward motion is produced; setae or bristles—rigid, filiform, movable, but not vibratile, used for support, walking, or climbing; styles—a thicker type of setae, neither rotating nor vibrating; uncini or hooks—short, thick, curved, and sometimes cleft setae, used for prehension, climbing, or creeping. Flagella, setae, styles, and uncini are modified forms of cilia. Other organs are the various types of membranes, some vibrating or undulating, others quiescent.

In Trypanosomata a membrane is the sole organ of progression, in *Trichomonas* and some of the *Hexamita* it is a supplementary locomotive organ; in the Choano-Flagellata it takes the form of a collar, and is used in combination with a central flagellum to capture food. In other genera it represents the only organ of locomotion and prehension, or is let down in front of the mouth and serves as a trap into which food particles are swept by ciliary currents; or, again, it is enclosed within, or projects from, the mouth as a small flap. Finally we have the tentacles of the Tentaculifera, which are either tubular and suctorial, or merely prehensile. It should be added that all the organs described above are extensions of the body-protoplasm.

ORAL APERTURE.—This is found in the Eustomata only; all other members of the Infusoria ingest food at any part of the peripheral surface. With the great majority of the Eustomata, the “mouth” is a simple orifice or a tubular passage. In some genera, however, the organization is more complex, and takes the form of a thickening of the lining wall, of a corneous tube, or of a tubular bundle of rod-like teeth, capable of protrusion beyond the oral fossa, and used, not for mastication, but for seizing prey. In *Dysteria*, these rods are replaced by a complicated arrangement of horny plates and styles. The oral aperture frequently opens into a secondary tubular passage or pharynx, which may or may not be ciliated.

ANAL APERTURE.—In all the Eustomata there is a distinct anal aperture, and in some of the Pantostomata it is partially developed.

CONTRACTILE VACUOLES.—These are clear, spheroidal spaces, contracting and expanding rhythmically, sometimes supplemented by lateral sinuses (the contents of which flow together immediately upon the contraction of the central vacuole and assist its re-expansion), or by a system of canals discharging into the vacuoles. In some species a number of independently-pulsating vacuoles are distributed throughout the cortical substance. The function of the vacuole is excretory; it collects the superfluous fluid brought into the body with the food-particles, and discharges it to the surface through a pore.

NUCLEUS OR ENDOPLAST AND NUCLEOLUS OR ENDOPLASTULE.—The contour of the simplest type of endoplast is spheroidal, in the next stage of development it becomes more or less ovate; then more attenuate and sausage-like; and, finally, ribbon-like. The ribbon form may be branched, or, again, it may have a series of more or less uniform constrictions, which, in some genera, are so evenly developed as to give the endoplast a symmetrical, necklace-like aspect. In other genera it appears as a series of nodules, apparently disconnected, but actually united by a slender filament. There are, however, species in which disunited endoplasts, in varying numbers, are scattered throughout the cortex. The endoplastule is contained within the endoplast in the majority of the Flagellata and a few of the Ciliata, but, amongst the greater portion of the latter, it is attached to the outside of the endoplast, or may be completely isolated from it. In some species, two or three endoplastules are associated with a single endoplast; in the case of *Loxodes rostrum*, in which the endoplast consists of a number of spheroidal elements, it is found that there is an endoplastule within each of these elements, and also an external series of similar endoplastule-like bodies attached sometimes to the outside of the endoplast and sometimes to the connecting filament.

COLOURING MATTERS.—Many of the Flagellata and a few of the Ciliata possess pigment-spots, usually crimson or scarlet, having the appearance of eyes; they are, however, merely coloured oil-drops or pigment granules. Colouring matter of various hues is diffused through the entire body-substance of a large number of the Infusoria; where this is green, spectroscopic analysis has shown it to be due to a chlorophylloid substance.

TRICHOCYSTS.—Many of the Ciliata and a few of the Flagellata contain trichocysts—minute, slender, rod-like bodies, usually crowded together and distributed in an even layer immediately beneath the cuticle, throughout the whole extent of the cortex, perpendicular to the external periphery. They correspond with the thread-cells or stinging-organs of the Coelenterata.

AMYLACEOUS CORPUSCLES.—The family of the Euglenidae, especially remarkable for its brilliant green colouring and eye-like pigment-spots, also contains these corpuscles of a starch-like nature; usually oblong, they are sometimes rod-like or even acicular. Their nature and significance are uncertain.

DECOMPOSITION OR DIFFLUENCE.—In uncongenial conditions, the soft sarcode bodies of the Infusoria become more or less rapidly disintegrated. If this is caused by allowing the water to evaporate, the action of decomposition may be stopped by a fresh supply of oxygenated water, when the animalcule, or the larger portion or portions of it that remain, will re-develop in the course of a few hours to the size and form of the normal zooid. Under similar circumstances the monadiform species assume an entirely irregular and mostly amoebiform contour. *Halteria grandinella* and its allies, and *Trachelius ovum* are given to suddenly bursting into fragments, without any apparent cause.

REPRODUCTION.—There are four methods by which the Infusoria are reproduced, viz:—

1. Fission, or binary division, either longitudinally, transversely, or obliquely; the first is the commonest process, the last comparatively rare. In all cases the nucleus undergoes subdivision. Fission usually takes place during the active life of the animalcule, but is sometimes preceded by encystment.
2. Gemmation or budding. This may be either external or internal, but neither is very general with the Infusoria. Internal gemmation is more particularly characteristic of the Tentaculifera.
3. Sporular multiplication. This method obtains amongst many of the Flagellata, is very rare amongst the Ciliata, and almost unknown amongst the Tentaculifera. The animalcule becomes

encysted, and is broken up into a greater or less number of spores, which, when liberated by the bursting of the cyst, gradually assume the form of the parent.

4. Sexual or genetic reproduction. By repeated binary fission, the Infusoria degenerate, and would become extinct unless some regenerative process were adopted. This is found in the method of conjugation, in which the animalcule coalesces or fuses with another of a neighbouring race or strain. Sexual reproduction, in the sense in which the term applies to multicellular animals, is unknown amongst the Infusoria, but is represented by this phenomenon of "conjugation." With the majority of the more highly organized Ciliata, this is only a transient process, two individuals of the same species and size becoming locked together, and swimming about freely in this condition for five or six days, when they separate. With the Flagellata, the Vorticellidae, and a few of the Hypotricha, the form of conjugation is complete and permanent, two animalcules becoming entirely melted or welded together; in this case the conjugating units are generally of unequal size, the smaller being absorbed by the larger.

DISTRIBUTION AND HABITATS.—The geographical distribution of the terrestrial and fresh-water forms of the Infusoria is probably world-wide. This is due, to quote Professor Hartog, "to their power of forming cysts, within which they resist drought, and can be disseminated as 'dust'." In this connection it may be of interest to state that I studied the Infusoria intermittently during four years' residence on the Blue Mountains, N.S. Wales, and do not recollect having found any species there which I have not since collected from the ponds about Newport.

As to their habitats, the great majority live in water—some in salt water only, others in fresh, others again in both salt and fresh indifferently. Saville Kent collected a variety of forms from dew-laden grass in London parks; certain species are found only in stagnant water; others are endoparasitic, living in the bodies of the Invertebrata and Vertebrata, including man himself; others again must be sought for in putrid fish and other animal macerations.

Owing to their perishable nature, few traces of the geological distribution of the Infusoria have been preserved, but some of the loricated species have been recognized by Ehrenberg in the Cretaceous and Tertiary deposits.

The following list (of the freshwater Infusoria only) has been compiled during the last six months, and does not pretend to be anything more than a starting-point for future records. A single locality is given for each species, but it must be understood that the majority of them will be found in every pond in which similar conditions

exist. The system of classification adopted is that of Saville Kent, with the exception that *Dinobryon*, *Synura*, *Syncrypta*, and *Uroglena*, included by him amongst the Flagellata, have been relegated to the Algae, on the authority of Mr. G. S. West.

BIBLIOGRAPHY.—“A Manual of the Infusoria,” Saville Kent; “The Micrographic Dictionary,” Griffith and Henfrey; “Protozoa,” Marcus Hartog, in Vol. I of the “Cambridge Natural History.”

CLASS: FLAGELLATA.

ORDER: FLAGELLATA-PANTOSTOMATA.

FAMILY: DENDROMONADIDAE.

- Anthophysa vegetans.** Pond, Heytesbury Farm, near Newport.
A. socialis. Pond, Fairlee, near Newport.

FAMILY: BIKOECIDAE.

- Stylobryon petiolatum.** Pond, Heytesbury Farm.

FAMILY: HETEROMITIDAE.

- Heteromita lens.** Westminster millpond, Newport.
H. globosa. Pond, Heytesbury Farm.

ORDER: CHOANO-FLAGELLATA.

FAMILY: CODONOSIGIDAE.

- Codosiga botrytis.** Pond, Fairlee.
C. umbellata. Pond, Fairlee.

FAMILY: SALPINGOECIDAE.

- Salpingoeca gracilis (?)**. Pond, Fairlee.

ORDER: FLAGELLATA-EUSTOMATA.

FAMILY: PARAMONADIDAE.

- Petalomonas ervilia.** Pond, Fairlee.
Phialonema cyclostomum. Pond, Fairlee.

FAMILY: ASTASIADAE.

- Astasia tricophora.** Pond, Heytesbury Farm.

FAMILY: EUGLENIDAE.

- Euglena viridis.** Pond, Priory Farm, Carisbrooke.
E. oxyuris. Pond, Heytesbury Farm.
E. spirogyra. Pond, Great Pan, Newport.
E. acus. Pond, Skinners, Northwood.
Phacus longicaudus. Pond, Fairlee.
P. triqueter. Pond, Heytesbury Farm.
Amblyophis viridis. Pond, Fairlee.
Trachelomonas volvocina. Westminster millpond.
T. rugulosa. Ditch, Blackwater.
T. hispida. Ditch, Blackwater.
T. cylindrica. Pond, Skinners.
T. armata. Pond, Skinners.

FAMILY: CHRYSOMONADIDAE.

- Uvella virescens.** Pond, near Newtown.

FAMILY: ZYGOSELMIDAE.

- Distigma proteus.** Pond, Fairlee.

FAMILY: ANISONEMIDAE.

- Heteronema globuliferum.** Pond near Newtown.
Anisonema grande. Ditch, Blackwater.

ORDER: CILIO-FLAGELLATA.

FAMILY: PERIDINIIDAE.

- Peridinium tabulatum.** Magazine Pond, Parkhurst.

FAMILY: MALLOMONADIDAE.

- Mallomonas Plosslii.** Pond, Great Pan.

CLASS: CILIATA.

ORDER: HOLOTRICHA.

FAMILY: PARAMOECHIDAE.

- Paramoecium aurelia.** Westminster millpond.
P. bursaria. Magazine Pond.

FAMILY: PRORODONTIDAE.

- Prorodon niveus.** Pond N. of Carisbrooke.

- Cyrtostomum leucas.** Stagnant water, Bowcombe marshes.
Holophrya ovum. Ditch, Blackwater.
H. brunnea. Stagnant water, Bowcombe marshes.

FAMILY: TRACHELOPHYLLIDAE.

- Urotricha lagenula.** Stagnant water, Bowcombe marshes.
U. farcta. Pond, New Fairlee.

FAMILY: COLEPIDAE.

- Coleps hirtus.** Westminster millpond.
C. uncinatus. Pond, Skinners.

FAMILY: ENCHELYIDAE.

- Enchelys farcimen.** Stagnant water, Bowcombe marshes.
Colpoda cucullus. Amongst flower stems in vase, Newport.

FAMILY: TRACHELOCERCIDAE.

- Trachelocerca olor.** Stagnant water, Bowcombe marshes.
Phialina vermicularis. Stagnant water, Bowcombe marshes.

FAMILY: TRACHELIIDAE.

- Trachelius ovum.** Ditch, Blackwater.
Amphileptus gigas. Pond, Fairlee.
A. anser. Magazine Pond.
A. meleagris. Westminster millpond.
Loxophyllum meleagris. Westminster millpond.

FAMILY: OPHRYOGLENIDAE.

- Ophtyroglena acuminata.** Pond, Fairlee.
Trichoda pura. Ditch, Blackwater.
Leucophrys patula. Westminster millpond.

FAMILY: PLEURONEMIDAE.

- Pleuronema chrysalis.** Westminster millpond.
Cyclidium glaucoma. Stagnant water, Bowcombe marshes.

ORDER: HETEROTRICHIA.

FAMILY: BURSARIIDAE.

- Metopus sigmoides.** Westminster millpond.

FAMILY: SPIROSTOMIDAE.

- Spirostomum ambiguum.** Westminster millpond.

FAMILY: STENTORIDAE.

Stentor polymorphus. Magazine Pond.**S. caeruleus.** Pond, Heytesbury Farm.

FAMILY: TINTINNODAE.

Tintinnidium semiciliatum. Stagnant water, the Wilderness.

ORDER: PERITRICA.

FAMILY: HALTERIIDAE.

Halteria grandinella. Westminster millpond.**H. viridis.** Pond, Fairlee.**Strombidium Claparedi.** Pond, Heytesbury Farm.

FAMILY: GYROCORIDAE.

Gyrocoris oxyura. Pond, Fairlee.**Urocentrum turbo.** Pond, Heytesbury Farm.**Telotrochidium crateriforme.** Pond near Newtown.

FAMILY: URCEOLARIIDAE.

Trichodina pediculus. Parasitic on *Hydra vulgaris*, Heytesbury pond.

FAMILY: VORTICELLIDAE.

Scyphidia rugosa. Pond N. of Carisbrooke.**Vorticella nebulifera.** Pond, Fairlee.**V. alba.** Pond, Heytesbury Farm.**V. campanula.** Pond, Fairlee.**V. nutans.** Pond, Heytesbury Farm.**V. citrina.** Pond, Heytesbury Farm.**V. constricta.** Ditch, Blackwater.**V. microstoma.** Stagnant water, Bowcombe marshes.**V. hamata.** Pond, Fairlee.**V. elongata.** Pond, Fairlee.**Carchesium polypinum.** Pond, Heytesbury Farm.**C. Lachmanni.** Pond, Fairlee.**Zoothamnium simplex.** Pond, Heytesbury Farm.**Epistylis anastatica.** On *Cyclops*, pond, Heytesbury Farm.**Opercularia microstoma.** On *Cyclops*, pond, Fairlee.**Vaginicola crystallina.** Pond, Fairlee.**Stylocola striata.** Westmill Pond, Newport.**Platycola decumbens.** Pond, Fairlee.**Ophrydium versatile.** Ryde (F. Morrant).

ORDER: HYPOTRICHA.

FAMILY: LITONOTIDAE.

- Litonotus fasciola.** Stagnant water, Bowcombe marshes.
L. Wrzesniowskii. Pond, Fairlee.

FAMILY: CHLAMYDODONTIDAE.

- Chilodon cucullulus.** Stagnant water, Bowcombe marshes.
Loxodes rostrum. Pond, Heytesbury Farm.

FAMILY: OXYTRICHIDAE.

- Psilotricha acuminata.** Pond near Newtown.
Oxytricha pellionella. Stagnant water, Bowcombe marshes.
Uroleptus piscis. Ditch, Blackwater.
U. violaceus. Ditch, Blackwater.
Pleurotricha lanceolata. Stagnant water, Bowcombe marshes.
Stylonichia mytilus. Pond, Fairlee.
S. pustulata. Pond, Fairlee.
S. macrostyla. Pond, Fairlee.

FAMILY: EUPLOTIDAE.

- Aspidisca costata.** Pond, Fairlee.
Glaucoma scintillans. Ditch, Blackwater.
Euplotes patella. Stagnant water, Bowcombe marshes.
E. charon. Pond, Fairlee.
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CLASS: TENTACULIFERA.

ORDER: TENTACULIFERA-SUCTORIA.

FAMILY: ACINETIDAE.

- Tricophrya epistylidis.** Pond, Fairlee.
Podophrya mollis. Pond, Fairlee.
Acineta lemnae. Ditch, Blackwater.
A. mystacina. Pond, Fairlee.

FAMILY: DENDROSOMIDAE.

- Dendrosoma radians.** Pond, Fairlee.

PORIFERA (SPONGES).

BY THE EDITOR.

SPONGES are interesting as a phylum inasmuch as they represent the simplest group of multicellular animals, linking up the Protozoa (single-celled animals) with the somewhat more complex group—the Coelenterata. Miss Sollas, in her able article on the Porifera in the “Cambridge Natural History,” Vol. I, remarks that the sponges as a group are more isolated than is any other in the Animal Kingdom, they having no near relatives.

Sponges are exceedingly variable in form, and some, such as *Euplectella* of the eastern seas, are of exquisite beauty. Many interesting and striking types of the World's sponges are exhibited at the Natural History Museum, S. Kensington, and should be consulted. As regards the British species, they are sufficiently numerous to require a work in four volumes to describe and figure them, namely: “A Monograph of the British Spongiadae,” by J. S. Bowerbank, 1864 to 1882.

I am not aware if anyone has studied or collected the sponges which occur on and off the shores of the Island, so am only able to give a few records.

Grantia ciliata. Occurs between tide-marks, growing on *Corallina* and other Algae. St. Helens (Vic. Hist.).

G. compressa. Also on Algae between tide-marks. St. Helens (Vic. Hist.).

Halichondria panicea. A common species which occurs in many forms; Brook, &c.

Chalina (Halichondria) oculata. A branched sponge not unfrequently cast up with seaweeds and hydroids.

Ephydatia (Spongilla) fluviatilis. This massive species occurs in the Medina near the East Medina Mill.

Cliona sp. A boring sponge. The holes in pieces of limestone and oyster-shells, frequently noticed on the north shore of the Island, are presumably due to *Cliona*.

COELENTERATA.

BY THE EDITOR.

IN this division of the Animal Kingdom are classed such organisms as the Hydroid Zoophytes—some of which are apt to be mistaken by the seaside visitor for seaweeds, the Sea Anemones, Corals, Seapens, and Medusae or “jelly-fishes”; though in the case of these latter it must be understood that they are in many cases but the free-swimming stage of organisms which at other times lead a sedentary life and are very different in appearance.

In the compilation of the following list I am indebted to the pages of “Science Gossip” for 1880-81, where, in two articles by C. Parkinson, a considerable number of Island species belonging to this phylum are enumerated. Also to the lists supplied by W. Garstang to the “Victoria History of Hampshire,” 1900.

The order followed is mainly that of the “Cambridge Natural History,” 1906. Prof. Hickson, in this work, divides the Coelenterata into three classes.

CLASS I. HYDROZOA.

ORDER. ELEUTHEROBLASTEIA.

Hydra viridis. Plentiful amongst various water plants in Westminster Pond, Newport (Pring).

H. vulgaris = *H. grisea*. Plentiful in pond at Heytesbury Farm (Pring); amongst *Lemna* at margin of stream in the Bowcombe valley (Morey).

H. oligactis = *H. fusca*. A single specimen obtained from a pond to the north of Carisbrooke railway station (Pring).

ORDER. GYMNOBLASTEAE-ANTHOMEDUSAE.

Hydractinia echinata. Incrusting the shells of gastropod molluscs tenanted by hermit crabs, St. Helens (W.G., in Vic. Hist.); on a *Fusus* thrown out from a crab-pot, Ventnor (C.P., in Sci. Gos.).

Coryne pusilla. St. Helens (W.G., in Vic. Hist.); attached to the fronds of a *Polysiphonia*, Steephill Cove (C.P., in Sci. Gos.).

Clava multicornis. On exposed rock, Ventnor (C.P., in Sci. Gos.).

Turris neglecta. The medusa form of *Clavula Gossii*. In the Solent and around the I. of W. (T. Hincks). Also recorded in the "Vic. Hist. Hants."

ORDER. CALYPTOBLASTEAE-LEPTOMEDUSAE.

Hydrallmania falcata (*Plumularia falcata*). Abundant at Ventnor, infesting the stems of brown Algae (C.P., in Sci. Gos.); on shells and stones, common (W.G., in Vic. Hist.); commonly cast up on the beach with seaweeds (Morey); Shanklin (H. F. Poole).

Sertularella gayi. Lives in deep water. I. of W. (Solander).

S. polyzonias (*Sertularia polyzonias*). Ventnor (C.P., in Sci. Gos.).

Sertularia pumila. In vast quantities at the roots of *Fucus*, Ventnor (C.P., in Sci. Gos.); abundant between tide-marks on *Fucus serratus*, St. Helens, &c. (W.G., in Vic. Hist.).

S. rosacea (*Diphasia rosacea*). Ventnor (C.P., in Sci. Gos.).

S. nigra or **fusca.** Parkinson records this species from Ventnor, but Hincks refers to it as an exclusively northern form.

S. abietina (Sea Fir). Ventnor (C.P., in Sci. Gos.); Shanklin (H. F. Poole).

S. filicula. Mr. Parkinson records this species also from Ventnor, but it requires confirmation.

S. operculata. I. of W. (Miss Kirkpatrick); Ventnor (C.P., in Sci. Gos.); Shanklin, on mussel shell (H. F. Poole); on mussel shells at Gurnard and Thorness, also at Atherfield (Morey).

S. argentea. I. of W. (Miss Kirkpatrick); Ventnor (C.P., in Sci. Gos.); Shanklin (H. F. Poole); Bonchurch (Morey).

S. cupressina. Ventnor (C.P., in Sci. Gos.).

Plumularia cristata (*Aglaophenia pluma*). Abundant at Ventnor on the stems of brown Algae (C.P., in Sci. Gos.); twining about the stem of *Halidrys siliquosa*, Bonchurch (Morey).

P. obliqua (*Laomedea obliqua*). On weeds and sponges near low-water mark (W.G., in Vic. Hist.); Ventnor (C.P., in Sci. Gos.).

Antennularia antennina. A broken fragment was found at Ventnor by Mr. Parkinson. Mr. Garstang remarks on the scarcity of this species in Hampshire waters.

Campanularia syringa. Ventnor (C.P., in Sci. Gos.).

C. dumosa (*Lafoëa dumosa*). Ventnor (C.P., in Sci. Gos.).

C. verticillata. Recorded, with doubt, from Ventnor, by Mr. Parkinson.

C. volubilis. Recorded, with doubt, from Ventnor, by Mr. Parkinson.

Obelia geniculata (*Laomedea geniculata*). Ventnor (C.P., in Sci. Gos.); *Zostera* bed, St. Helens (W.G., in Vic. Hist.). The medusa stage of this species, known as *Obelia lucifera*, is recorded as common during the summer months by Mr. Garstang.

O. gelatinosa (*L. gelatinosa*). Ventnor (C.P., in Sci. Gos.).

Phialidium buskianum. Spithead in June (W.G., in Vic. Hist.). This is the medusa stage of a Hydroid Zoophyte.

ORDER. SIPHONOPHORA.

Physalia pelagica (Portuguese Man-of-War). In "Science Gossip" for 1879, E. H. Robertson records a specimen as having been cast up on the beach at Bonchurch in October. He also calls attention to the fact that in the "Intellectual Observer" for 1862, another example is recorded for the Island as occurring in July. Mr. S. W. Pring informs me that he also saw a specimen cast ashore at Blackgang.

CLASS II. SCYPHOZOA = SCYPHOMEDUSAE.

ORDER. STAUROMEDUSAE.

Halicystus auricula (*H. octoradiatus*). Adhering to Algae at extreme low-water mark, Ventnor (C.P., in Sci. Gos.); on seaweeds at low water, Shanklin (H. F. Poole).

Lucernaria fascicularis. Attached to Algae at low water, Ventnor (C.P., in Sci. Gos.).

L. campanulata. Ventnor (C.P., in Sci. Gos.). This and the preceding two species are a kind of jelly fish, but are provided with a stalk by which they attach themselves to Algae, &c. They are but an inch or less in height.

ORDER. DISCOPHORA.

Chrysaora isosceles. Mr. G. W. Colenutt informs me that he has seen what he believes to be this species of jelly fish off Ryde.

Aurelia aurita. This is the jelly fish which appears so commonly off the Island, and in the Medina Estuary, during the summer months. Large numbers are sometimes cast up on the beach and thus perish. This would seem to be one of Nature's ways of keeping the species within bounds, as it is exceedingly prolific and appears to have but few, if any, enemies to prey upon it. Some jelly fishes are estimated to be 98 per cent water.

Rhizostoma pulmo. A large firm jelly fish which I assume to have been of this species was noticed by me last summer (1907) cast ashore at Brook. Mr. Sinel says that *Rhizostoma* is frequently stranded on the shore in the Channel Islands.

CLASS III. ANTHOZOA = ACTINOZOA.

ORDER. ALCYONACEA.

Alcyonium digitatum (Dead-man's Fingers). Adhering to oysters, or cast up with seaweeds, at Bonchurch (C.P., in Sci. Gos.).

ORDER. ACTINIARIA (Sea-anemones).

Ilyanthus sp. Mr. Parkinson, in "Science Gossip" for 1880, records the occurrence of, and figures an example of, what he takes to be *Ilyanthus scoticus*.

Actinia mesembryanthemum. Ventnor (C.P., in Sci. Gos.); numerous varieties of this species abound (Venables' Guide); attached to rocks everywhere between tide-marks, St. Helens (W.G., in Vic. Hist.). Prof. Hickson, in the "Cam. Nat. Hist.," refers to an individual of this species which lived in an aquarium to the surprising age of 66 years.

A. (Tealia) crassicornis. Ventnor (C.P., in Sci. Gos.); abundant about Ventnor, and occurs also at Bembridge (Ven. Guide).

A. (Tealia) coriacea. Ventnor (C.P., in Sci. Gos.).

Anthea cereus. On *Zostera* beds, St. Helens, abundant, also at Ventnor (Vic. Hist.); two varieties are mentioned by Gosse as occurring at Ventnor; Ventnor (C.P., in Sci. Gos.); small specimens are occasionally found high up between tide marks (Ven. Guide).

A. Alba. At low water, Ventnor (C.P., in Sci. Gos.). Probably this record refers to the white-tentacled variety of *cereus-alabastrina*, mentioned by Gosse as occurring at Ventnor.

Sagartia bellis. Bembridge, and at Shanklin Ledge (Ven. Guide); in holes of rocks, &c., chiefly in tide-pools (Vic. Hist.). *Sagartia* also is long-lived, specimens now in aquaria being 50 years old, or more.

S. troglodytes. Attached to weeds in an old oyster-bed, St. Helens (W.G., in Vic. Hist.).

Bunodes ballii. Not uncommon at Shanklin, and the var. *funesta* is found at Bembridge (Ven. Guide); Ventnor and Freshwater Bay are localities given by Gosse; St. Helens, fairly common on stones and clay boulders on *Zostera* beds (W.G., in Vic. Hist.).

CTENOPHORA.

Hormiphora plumosa. A little jelly fish of about the size of a hazel nut, and with two long streamers. Abundant at Spithead (W.G., in Vic. Hist.); off Ryde (G. W. Colenutt).

In the foregoing list, I have enumerated all those species of which I have found records as having been observed in the Island. It will be noticed that a few of these are entered with some doubt, and need confirmation by further observation; two or three others, again, which are given as species, may have to rank as varieties only.

I have not thought it necessary to add, in a list of this description, the various popular names which have been given to many of the "corallines" (*Sertularia* and allied genera), nor to the anemones, but those interested in such will find them in the manuals by Hincks and Gosse.

Books recommended are "British Hydroid Zoophytes," by Thomas Hincks, 1868; and "British Sea-anemones and Corals," by P. H. Gosse, 1860, for special groups; and the article in the "Cambridge Natural History," Vol. I, by Professor Hickson, which covers the whole ground.

ECHINODERMATA.

BY THE EDITOR.

THE animals belonging to this group, or phylum, are mostly "spiny-skinned"—hence the name Echinodermata.

Though possessing characters in common they present great diversity in form, and are consequently divided into five well-defined classes. These are as follows:—

Asteroidea (Star-fishes).
Ophiuroidea (Brittle-stars).
Echinoidea (Sea-urchins).
Holothuroidea (Sea-cucumbers).
Crinoidea (Feather-stars).

Of these five classes the first four, at least, are represented on, or off, the shores of the Island, and very probably the British representative of the Crinoidea—the Rosy Feather-star (some authors make six species of it) may some day be found in the deeper water off our coast. This latter species is peculiarly interesting, being apparently the only surviving member, in British seas, of a dying race, it being closely related to the encrinites or "stone-lilies" so abundant in these and other seas in bygone ages.

From the testimony of the rocks we know that Echinoderms have peopled the seas of the World from Cambrian days onwards. They are practically all marine, and are for the most part gregarious in habit.

It cannot be said that the Isle of Wight is favoured by the presence of any great number of these interesting creatures—at least, in as far as the shore between tide marks is concerned, as we can only speak with certainty of ten species. This may be because no one seems to have studied this group much in the Island, for other species must undoubtedly occur, especially in the deeper water.

The following are the few species thus far recorded:—

STAR-FISHES.

Asterias rubens, *Linn.* = *Uraster rubens* (Common Crossfish). Common at Shanklin and Sandown; more frequently met with by fishermen on their lines than seen at low water or thrown up on the beach (H. F. Poole); some large specimens occasionally noticed on the shore at Ryde (G. W. Colenutt).

Cribella oculata, *Penn.* Occurs occasionally at Sandown (Poole).

Solaster papposa, *Linn.* (Red Sun-star). Common at Shanklin and Sandown (Poole); Spithead (Vic. Hist.); Steephill Cove (C. Morey).

BRITTLE-STARs.

Ophiura texturata, *Lam.* (Common Sand-star). Very occasionally washed up at Shanklin (Poole).

Ophiocoma neglecta, *John.* (Grey Brittle-star). This minute species is abundant amongst *Corallina* at Horseledge, Shanklin, and fairly common under stones, &c., at the base of the Culver Cliffs in Sandown Bay; as many as 23 were taken from the coral-line round a little rock pool only about a foot square (Poole); under stones and in coralline pools, St. Helens (Vic. Hist., as *Amphiura elegans*).

O. rosula, *Link* (Common Brittle-star). One only washed up at Shanklin (Poole); Spithead (Vic. Hist., as *Ophiothrix fragilis*).

SEA-URCHINS.

Echinus miliaris, *Linn.* (Shallow-water Urchin). This species, which is depressed and is barely two inches in diameter, is sometimes seen on the sands at Ryde, and occasionally gets into the shrimp nets (Colenutt). The larger and more spherical species, *E. esculentus*, is recorded from Poole, and may be expected to occur off the Island.

Amphidotus cordatus, *Pen.* (Common Heart-urchin). I have seen a dried Island specimen of what appears to be this species, but it is evidently uncommon with us. Mr. Garstang, in the "Vic. Hist.," refers to the allied species, *Spatangus purpureus* as occurring both to the east and west of the Island—at Brighton and Weymouth respectively.

SEA-CUCUMBERS.

Cucumaria pentactes, *Flem.* (Com. White Angular Sea-cu.).
Among clay boulders, St. Helens (Vic. Hist.).

Synapta inhaerens, *Müll.* (Burrowing Sea-cu.). Among clay
boulders, St. Helens (Vic. Hist.).

Two books which will be found very useful by those who wish to study this group are recommended: Forbes' "British Starfishes," 1841, which, though published so long ago, is still invaluable to those who wish to work at the British species of this and the allied groups; and the "Cambridge Natural History," Vol. I, 1906, which gives the last word on classification, and deals with the Echinodermata of the World.

Students are also advised to consult the type specimens displayed in the "Starfish Gallery" of the Natural History Museum at South Kensington.

WORMS AND THEIR ALLIES.

BY THE EDITOR.

THE term "worm" has been used somewhat loosely to include a number of groups of animals which differ widely amongst themselves, but which it has been difficult to place elsewhere, except, indeed, as distinct classes, and this is now being done.

The second volume of the "Cambridge Natural History" is devoted entirely to these groups and should be consulted. The arrangement therein adopted is as follows:—

PLATYHELMINTHES.—Flat Worms: these include the Turbellaria, a group which comprises many curious forms living in ponds and streams, in the sea, and upon the land. Of the latter, I have noticed at Ventnor a specimen of *Rhynchodemus terrestris*—one of the Land Planarians; it was hidden beneath some decayed leaves in a damp, shady spot in a garden. The Trematoda are mainly "flukes" and consist of many species which are parasitic in, or upon, various vertebrate animals, from frogs to kangaroos. The species which is, perhaps, of the greatest importance to us in England is the liver-fluke of the sheep, which sometimes works terrible havoc amongst the flocks. This pest passes its earlier stages in the body of a water snail, *Limnaea truncatula*, which is common in the Island. The Cestoda are tape-worms, and live a parasitic life within the bodies of Vertebrates.

NEMERTINEA.—A group of comparatively smooth worms living in the sea, or on the shore between tides. There are about 40 British species. These are described and figured by Prof. McIntosh in his work on the "British Annelids," pub. by the Ray Society. They vary in length from an inch, or less, to about 30 yards.

NEMATHELMINTHES.—An extensive assemblage of unsegmented worms which pass a portion if not the whole of their lives as parasites

in the bodies of other animals. This group includes the thread-worms.

CHAETOGNATHA.—A class embracing but a few species of more or less transparent worms which are marine and pelagic in habit.

ROTIFERA.—An interesting class of minute animals living for the most part in fresh water and well represented in the Island. A list of the local species is given in a separate article.

POLYCHAETA.—An important order of marine worms which is dealt with in another paper.

OLIGOCHAETA.—Includes the earthworms, and also a few species which live in the water. Seventeen species of earthworms are known to occur in Britain, but I am unable to say as to how many of these we have in the Island.

HIRUDINEA.—Leeches. About 20 species are known to inhabit Britain.

GEPHYREA.—A group of marine animals allied to, but scarcely to be regarded as, worms. The majority are found in the warm seas of the Tropics, but several species occur off the British coast.

POLYZOA.—The colonial animals comprised in this group can by no stretch of imagination be regarded as worms, but they have affinities with them. A good number of Island species have been collected and are treated of in another place.

ROTIFERA.

BY S. W. PRING AND F. M. WALKER, B.A.

THE Rotifers (Rotifera, Rotatoria, or Wheel-Animalcules, as they are variously called) form a somewhat isolated, yet well-defined, group of the Animal Kingdom, in which their exact position is still a matter of conjecture. This uncertainty, together with their high organisation, their charming appearance, their curious life history (presenting, as it does, so many unsolved problems), and the ease with which most of their life functions may be observed, will explain the great fascination which this interesting group has always had for the microscopist.

STRUCTURE.—The Rotifer is a minute animal ranging in length from $\frac{1}{500}$ " to $\frac{1}{8}$ ". It is always bilaterally symmetrical, and its body is generally divided into three regions: the head, the trunk, and the foot.

The head, which is not very distinct, though usually defined by a neck-like constriction, ends in a disc bearing two zones of cilia, which are used for swimming, for creeping over débris, and for producing vortices by means of which food is swept into the funnel-shaped mouth. In *Synchaeta* and many of the Notommatidae the head also carries a pair of ciliated auricles, which serve to accelerate the speed when swimming. In many species the whole head can be withdrawn by powerful muscles.

The trunk contains the viscera. Its cuticle is chitinous, of varying texture, in many species smooth and flexible, in others hardened into a rigid lorica, which resists decomposition and remains intact after its soft contents have disappeared; several species have never been found in a living state, and have been determined from the empty lorica only. The lorica differs widely in different species; in some it is smooth, in others dotted, or wrinkled, or faceted; in some instances it is prolonged into spines. The hypoderm constituting the wall of the body cavity is somewhat granular, but has no cellular boundaries, though containing nuclei. The Orders Flosculariaceae and Melicertaceae include a large number of species which secrete tubes into which they can wholly withdraw themselves; these tubes (urceoli) are hyaline, floccose, or annulated, and

are generally attached to water plants. In *Melicerta* and some species of *Oecistes* the formation of the urceolus by secretion takes place in the very young state only, and it is subsequently lengthened and enlarged by disgorged faecal pellets, which are built on to the tube by the animal itself. The body of the Rotifer is equipped with powerful muscles, both transverse and longitudinal, and either smooth or striated. Its shape varies greatly; in some species it is spherical, in others ovoid, conical, more or less elongated, flat, or segmented.

The foot (which is altogether wanting in some species) usually ends in two toes, but in the genus *Rotifer* there are three, and in other species none; in others again it terminates in a disc. It is generally jointed and often retractile. It contains glands which secrete a viscid cement, which is discharged through ducts, and serves to anchor the animal while it feeds. The toes display amazing variations in shape and length; in some cases they are quite short (not more than $\frac{1}{20}$ th of the length of the body) and stunted, in others very long (as much as twice the length of the body) and slender. Again, some are incurved, some decurved, some perfectly straight; some are blade-shaped, others rod-like; some acutely pointed, others bluntly rounded. Gosse considers the characters of the toes to be remarkably constant, and of value in determining species.

DIGESTIVE ORGANS.—These consist of the pharynx, at the lower end of which is the mastax, the oesophagus, the stomach, the intestine, the kidneys with their vibratile tags, the so-called salivary glands, the gastric glands, and, with few exceptions, the terminal anus. The mastax or gizzard is a remarkable feature of the whole of the Rotifera. It is a muscular sac containing the chitinous trophi or chewing organs, which consist of a central incus or anvil formed of three pieces, and two mallei or hammers working on hinges; between the mallei and the incus the food is torn and crushed into fragments. In many species the trophi are protrusible through the mouth, for the purpose of seizing food; they differ greatly in form, and are of considerable assistance in the identification of species.

NERVOUS SYSTEM.—This is centred in the brain, a ganglionic mass situated in the head. In the Bdelloida there is a second ganglion, the two being connected by cords containing ganglion cells. From the brain nerves proceed to various parts of the body.

SENSE ORGANS.—The organs of touch and (or) smell are the antennae, usually three in number. Most Rotifers possess one or more eyes, almost always of some shade of red; their position varies, but they are usually on the brain or on the front of the head. They are of different sizes and shapes, and some are undoubtedly of considerable magnifying power.

REPRODUCTION.—The two sexes are distinct, but, owing to the enormous preponderance of the females, parthenogenesis is habitual;

the young are either born alive, or the eggs are carried about by the parent until hatched. The eggs are of two kinds—the unfertilised or “summer” egg, and the fertilised or “winter” egg. The ordinary summer egg develops into a female, but, under certain conditions, the chief of which is a rise in temperature, smaller summer eggs are produced from which males are hatched. Fertilisation by the males then takes place, and the result is the production of the hard-shelled winter eggs, which fall to the bottom of the pond, and are hatched in due course. Professor Hartog considers that the male eggs are produced when the temperature approaches that at which the ponds habitually dry up, in order that a supply of fertilised drought-resisting eggs may be provided, whereby the continuance of the species is secured. Reproduction by budding or fission is unknown amongst the Rotifera.

The male Rotifer is much smaller than the female, and, with two exceptions, has no trace of a digestive apparatus and but little of a mouth or a mastax; he is most difficult of observation, his brief existence being spent in a state of feverish activity.

MOVEMENTS.—These are of great variety, both of manner and speed. The Bdelloida crawl like leeches, but can also swim freely by means of the ciliary disc, which then has the appearance of revolving wheels—hence the popular name of Wheel-Animalcules. Other species revolve on their long axes, others turn somersaults. The movements of *Anuraca* are compared by Gosse to those of a ship in a heavy sea; *Pedalion* goes through the water in a series of rushes, interspersed with smooth glidings; *Colurus* is incessantly restless; *Cathypna*, with head retracted, sways languidly on the tips of its toes for long periods; the Triarthridae and the Scirtopoda leap by means of springing bristles and limbs respectively, and *Scaridium* by its great foot.

HABITS.—About 700 species of Rotifers have now been described; of these some 90 are found in salt or brackish water, and of the 90 a considerable number also occur in fresh water. Of the remaining 600 the majority inhabit fresh water, either as free-swimmers, or attached to water-plants, or to the limbs of Crustacea. One species lives in the galls of *Vaucheria* and another in the spheres of *Volvox*. A few of the Ploima and most of the Bdelloida inhabit mosses and Jungermanniaceae; *Albertia*, *Drilophagus*, and *Balatro* are parasites of fresh-water worms; the Seisonaceae affix themselves to a small marine Crustacean, and *Discopus* to a Holothurian.

The Rotifera generally feed on small Infusoria, or on vegetable matter, and are peaceable and well-behaved, but a few are cannibalistic and ferocious. Their life is a short one—Maupas found that the greatest age of the unfertilised female of *Hydatina* was thirteen days, during which some fifty eggs were produced; the fertilised female lives seven or eight days and produces about sixteen eggs; the male dies in two or three days. Nearly all the Bdelloida,

however, are able to prolong their existence by gradual desiccation, during which they close up their telescopic bodies and plug the ends with a gelatinous secretion. In this state they can exist for a long period and can be revived by the addition of a few drops of water; they have been exposed to a temperature of four degrees below zero Fahr., immersed in water heated to 158° Fahr., and plunged into the vacuum of an ordinary air-pump, without, apparently, suffering any inconvenience. This power of resisting adverse conditions would explain the persistence of occurrence which the Rotifera display in all parts of the World.

DISTRIBUTION.—The cosmopolitan distribution of the Rotifera is doubtless largely due to the scattering as dust of the winter eggs and the desiccated bodies. At the same time it should be noted that local preferences are strongly marked, species which are quite common in one place being very rare or unknown in others.

BIBLIOGRAPHY.—Hudson and Gosse, "The Rotifera or Wheel-Animalcules"; Zelinka, "Studien ueber Rotatorien"; Marcus Hartog, in Vol. 2 of the "Cambridge Natural History," to whom we are indebted for much of the above information; C. F. Rousselet, in the "Journal of the Royal Microscopical Society" for August 1893, February 1897, and April 1902.

In the following list we have adopted the Cambridge Natural History's system of classification, which is a modification of that of Hudson and Gosse. With few exceptions the species recorded have been collected during the months of April, May, June, July, and August of this year, from fresh water only. We might have multiplied localities for many of them, but pressure of time compelled us to restrict ourselves to one in each instance, and for the same reason we have not worked the marine species.

ORDER I: FLOSCULARIACEAE.

FAMILY: FLOSCULARIIDAE.

Floscularia cornuta. Pond, Fairlee, near Newport.

F. campanulata. Magazine Pond, Parkhurst.

Stephanoceros eichhornii. Ditches, Sandown (Miss Hudson).

ORDER II: MELICERTACEAE.

FAMILY: MELICERTIDAE.

Melicerta ringens. On *Potamogeton* and *Lemna* in stream near Gunville.

Limnias sp. Ditches, Sandown (Miss Hudson).

Oecistes crystallinus. Pond, Heytesbury Farm, near Newport.

ORDER III: BDELLOIDA.

FAMILY: PHILODINIDAE.

Philodina roseola. Pond, Fairlee.

P. citrina. Pond, Fairlee.

Rotifer vulgaris. Pond, Fairlee.

R. macroceros. Pond, Fairlee.

R. hapticus. Pond, Fairlee.

R. tardus. Pond, Heytesbury Farm.

Actinurus neptunius. Pond, Hamstead.

Callidina elegans. Pond, Newtown.

ORDER IV: ASPLANCHNACEAE.

Sacculus viridis. Pond, Hamstead.

The genus *Sacculus*, placed by Hudson & Gosse in their "Order Asplanchnadae", is not mentioned in the "Cambridge Natural History"; unfortunately we have no means of tracing its new designation, and have therefore included it in the Asplanchnaceae.

ORDER V: SCIIRTOPODA.

We have found no representatives of this Order.

ORDER VI: PLOIMA.

SUB-ORDER A: ILLORICATA.

FAMILY: RHINOPIDAE.

Rhinops sp. Ditches, Sandown (Miss Hudson).

FAMILY: HYDATINIDAE.

Hydatina senta. Pond, Priory Farm. Also the male of this species.

Notops brachionus. Pond, Priory Farm.

FAMILY: SYNCHAETIDAE.

Synchaeta tremula. Pond, Heytesbury Farm.

S. pectinata. Pond, Hamstead.

FAMILY: NOTOMMATIDAE.

Notommata aurita. Pond, Fairlee.

N. tripus. Westminster millpond, Newport.

N. saccigera. Westminster millpond, Newport.

N. lacinulata. Pond, Great Pan, Newport.

N. cyrtopus. Running water, Shide.

Proales sordida. Pond, Fairlee.

P. petromyzon. Pond, Heytesbury Farm.

P. decipiens. Pond, Heytesbury Farm.

P. gibba. Pond, Great Pan.

P. tigridia. Pond, Great Pan.

Furcularia ensifera. Stagnant water, Bowcombe marshes.

F. gracilis. Pond, Shalfleet.

F. forficula. Ditches, Newchurch.

Eosphora aurita. Pond, Great Pan.

Diglena catellina. Pond, Great Pan. Also the male of this species.

D. aquila. Pond, Heytesbury Farm.

D. forcipata. Pond, Heytesbury Farm.

D. biraphis. Pond, Skinners.

We found several specimens in pond water from Skinners. The whole of the body is filled with green matter and the trophi are very protrusile.

D. circinator. Running water, Shide.

Gosse thought he saw a pair of frontal eyes, but the Shide specimens had a small pale-red eye on the point of the brain and a greenish eye-like spot on each side of the frontal hook.

Taphrocampa Saundersiae. Pond, Skinners.

FAMILY: TRIARTHRIDAE.

Triarthra longiseta. Pond, Hamstead.

T. breviseta. Pond, Priory Farm.

Polyarthra platyptera. Pond, Hamstead.

SUB-ORDER B: LORICATA.

FAMILY: RATTULIDAE.

Rattulus tigris. Ditches, Sandown.

Mastigocerca stylata. Pond, Barton Corner, near Binstead.

M. carinata. Ditches, Sandown.

M. bicristata. Ryde (F. Marrant).

Coelopus porcellus. Ditch, Blackwater.

C. tenuior. Pond, Great Pan.

FAMILY: DINOCHARIDIDAE.

Dinocharis pocillum. Pond, Hamstead.

D. tetractis. Westminster millpond.

We found *D. pocillum* to be more frequent than *D. tetractis*.

Stephanops muticus. Pond, Great Pan.

FAMILY: SALPINIDAE.

Salpina brevispina. Pond, Fairlee.

S. mucronata. Pond, Fairlee.

Diaschiza gibba. Ditch, Blackwater.

According to Mr. C. F. Rousselet, whom we consulted on the subject, this species is synonymous with *Furcularia gibba*, Ehr. and *Diaschiza semiaperta*, Gosse.

D. valga. Pond, Heytesbury Farm.

D. Hoodii. Pond, Fairlee.

Kindly named for us by Mr. Rousselet, to whom we sent a drawing and description of the specimen.

D. paeta. Pond, Skinners.

FAMILY: EUCHLANIDIDAE.

Euchlanis triquetra. Pond, Fairlee.

E. dilatata. Westminster millpond.

E. deflexa. Westminster millpond.

E. uniseta. Pond, Great Pan.

FAMILY: CATHYPNIDAE.

Cathypna sulcata. Slow stream, the Wilderness.

C. rusticula. Ditches, Sandown.

C. luna. Pond, Great Pan.

Monostyla bulla. Stream, Sheat.

M. lunaris. Pond, Heytesbury Farm.

M. cornuta. Pond, Hamstead.

FAMILY: COLURIDAE.

Colurus caudatus. Pond, Fairlee.

C. deflexus. Pond, Fairlee.

C. uncinatus. Ryde (F. Morrant).

Metopidia lepadella. Pond, Fairlee.

M. solidus. Pond, Fairlee.

M. bractea. Pond, Heytesbury Farm.

M. oxysternum. Pond, Heytesbury Farm.

FAMILY: PTERODINIDAE.

Pterodina patina. Pond, Fairlee.

P. valvata. Pond, Fairlee.

FAMILY: BRACHIONIDAE.

Brachionus pala. Pond, Hamstead. Also the male of this species.

B. Bakeri. Pond, Priory Farm.

B. angularis. Pond, Barton Corner.

Noteus quadricornis. Pond, Heytesbury Farm.

Abundant in the sediment of the water obtained from this pond.

FAMILY: ANURAEIDAE.

Anuraea brevispina. Pond, Hamstead.

A. hypelasma. Pond, Shalfleet.

A. cochlearis. Pond, St. Helens.

Notholca acuminata. Newchurch.

A single specimen, found in a wide ditch of clear water filled with various aquatic plants and having a floccose sediment. The posterior end of the lorica was rather more rounded than in Gosse's drawing.

ORDER VII: SEISONACEAE.

The members of this Order are marine only.

All the above species, with the two exceptions noted, have been named from Hudson and Gosse's great work—the only one which we have been in a position to consult. There are, of course, many gaps in the list, the most noteworthy absentees being the *Asplanchnas*, for which we have searched carefully but unsuccessfully.

GASTROTRICHA.

This small Order of thirty-two species (only seven of which have been recorded as British) has affinities with the Rotifera, and the commonest species, *Chaetonotus latus*, is, in the older books of reference, called the "Hairy Rotifer"; the Order is, however, more closely related to the Turbellarians and the Nematodes than to the Rotifers. The Gastrotricha are very small fresh-water creatures, varying in length from $\frac{1}{80}$ " to $\frac{1}{300}$ ", and in habits and appearance bear a strong resemblance to some of the Ciliated Infusoria. *Chaetonotus latus* is plentiful in all the water which we have examined, and we have noticed several other species which we have no means of identifying.

SOME ISLAND POLYCHAETA.

BY E. W. POLLARD, B.Sc. (Lond.).

THE Polychaeta are marine worms forming an order in the subclass Chaetopoda, class Vermes of the Animal Kingdom.

They are, like the Oligochaeta (land worms), segmented animals, but are distinguished by the segments bearing "feet" (parapodia) which bear stiff hairs (setae); they usually have a distinct head bearing tentacles, and also gills variously disposed on the animal.

They are almost exclusively marine, and are of complex organization; some are so curious as to be difficult to place in the "worms" at all.

Some are endowed with means of rapid locomotion, and a few are pelagic, but the vast majority live on the shore, burrowing in sand or mud, or hiding at low tide under stones and debris; a few are phosphorescent; many build tubes of sand, &c.; and this gives the two main divisions to the order, namely:—

ERRANTIA—free living forms, and

TUBICOLA—those that live in tubes.

Both are well represented around our coasts, and a few indicated below will show some variety of form. No attempt is made to give a complete list of species.

The most promising "field" is the mud-flats on the N.E. coast of the Island from Osborne to Sea View, though many can be found under stones on sandy shores: shingle is useless.

ERRANTIA.

Nereis cultrifera. The commonest worm on the shore is the "rag-worm" of the fishermen. It burrows in sand or mud, or lives under stones; it is a very active species, and has numerous well-developed parapodia and an eversible pharynx, but no gills.

N. diversicolor. A green species found under rocks; it shows the dorsal blood-vessel well.

Aphrodite aculeata (Sea-mouse). Not often met with, but occasionally thrown up by the tide; has very long setae, closely set and iridescent; about 4in. long and $1\frac{1}{2}$ in. broad—looking little like a “worm.”

Polynoe propinqua. Very active, scuttling away when a stone is upturned; about the size and shape of a wood-louse; scales all along the back; no gills; very common.

Sthenlais boa. Equals the rag-worm in size, but has a large number of dorsal scales.

Glycera capitata. A small “rag,” reddish in colour; very fond of everting its pharynx, giving it a repulsive look.

Eulalia viridis. A dark-green, wiry worm living amongst barnacles on piles, &c.

Syllis ramosus. Free swimming, deep sea species; sometimes branched; found in trawl nets.

TUBICOLA.

Arenicola piscatorum. The “lug-worm” of the fishermen. A clumsy form which has tufted gills on the middle segments; the coiled “casts” are conspicuous objects on the sand.

Terebella conchilega. Forms a tube of bits of chalk, shells, and sand projecting an inch from the surface of the ground; furnished with filamentous gills on the head; very common.

Sabella pavonia. About 12 inches long; builds a leathery tube which projects 6 inches from the sand; has beautiful fan-like gills which it retracts suddenly when disturbed; common under Ryde pier.

Serpula contortuplicata. Builds a tortuous tube of lime on stones, shells, &c.; has pretty, small fan gills.

Spirorbis spirillum. A tiny worm, about $\frac{1}{8}$ inch in diameter, similar to *Serpula*; lives in coiled calcareous tube on seaweeds.

POLYZOA.

BY DOUGLAS LEIGHTON.

THE Polyzoa, or Bryozoa as many authors name them, include the so-called sea-mats, sea-scurfs, and sea-mosses. They were formerly looked upon as plants, their animal nature first being demonstrated by Ellis. Linnaeus, however, never quite accepted this view and included them in his class of "animal vegetables,"—Zoophyta. Their position among the Invertebrates has been the subject of much discussion, but they are now usually placed by themselves next below the Mollusca.

With the exception of the genus *Loxosoma*, they are colonial animals. The greater part are marine; a small but most interesting group, however, are inhabitants of fresh water.* The colonies of many species are of very considerable size, and nearly all are quite easily distinguishable with the unaided eye. To observe the characters of each individual polypide, however, a fairly high-power microscope is necessary. The size of a single cell varies very much with different species, but as a rule they measure about $\frac{1}{50}$ inch to $\frac{1}{100}$ inch in length.

The life history is very interesting. The first state is a small free-swimming, and very active, ciliated larva, which, after a short time, attaches itself to some shell, stone, weed, or other object, and from which a primary cell and polypide presently appear. Further cells are added by gemmation or budding, until the colony is full grown. An individual polypide may, after a certain period, to all appearances, die, and shrivel up into what is known as a "brown body." On this a bud appears and a fresh animal soon grows up, occupying the place of the old one. Reproduction takes place by ova and spermatozoa, most species being hermaphrodite.

A colony may contain hundreds of individuals, each one of which can act quite independently of the rest and has its own nervous system.

* None of the freshwater group has as yet been recorded for the Island, though this is doubtless because they have not been searched for (Editor).

The forms of growth which different species take on vary very much. They may be found incrusting in glistening patches or completely covering shells, stones, and weeds; or they may rise in erect, stony, coral-like masses. Some grow in delicate wavy tufts, while others, forming large palmate fronds, have very much the appearance of sea-weeds.

The total number of species of Polyzoa recorded by Hincks as British is 235. For the south-west, a part which he says has been thoroughly investigated, he gives 139.

The list given here for the Isle of Wight contains 51 names, most of which are typical southern or south-western forms. Of these, 26 have been previously recorded in an article in "Science Gossip," 1881, by C. Parkinson, F.G.S., entitled, "A Week among the Marine Zoophytes of the Isle of Wight." Another six are given on the authority of T. Hincks, while three more are taken from the list in the "Victoria County History." For the remaining sixteen there appears to be no previous record. One species about which more information would be interesting is *Membranipora membranacea*. This is usually a very common species, and is stated to be abundant off Hampshire (V.C.H.). In the Island, however, it can only be recorded by some small and very poor colonies found growing on *Zostera* at St. Helens.

One of the best places in the Island for collecting Polyzoa is the shore between Yarmouth and the mouth of the Newtown river. Large quantities of dead oyster, whelk, and piddock shells are to be seen here, and on many of these good colonies may be found. This part is referred to in the List as Hamstead. On the south coast very good specimens may be found by searching among the roots of *Laminaria*, especially *L. digitata*, cast up after a storm. These roots are in themselves regular museums, and one very large one, found near Hanover Point, harboured no less than fourteen different species of Polyzoa, besides various hydroids, sponges, and other small marine creatures.

The nomenclature and classification here used is that adopted by the Rev. T. Hincks in his "British Marine Polyzoa," 1880, which is the standard work on the subject.

A LIST OF THE MARINE POLYZOA FOUND OFF THE
ISLE OF WIGHT.

CLASS. POLYZOA, J. V. THOMPSON.

SUB-CLASS. HOLOBRANCHIA, LANKESTER.

GROUP A. ECTOPROCTA, NITSCHKE.

ORDER. GYMNOLOEMATA, ALLMAN.

SUB-ORDER I. CHEILOSTOMATA, BUSK.

Aetea anguina, *Linnaeus*. On weeds at Hamstead, Whitecliff, Shanklin, Totland Bay, Ventnor, and Brook.

Gemellaria loricata, *Linnaeus*. On weeds at Ventnor (Parkinson).

Scrupocellaria scruposa, *Linnaeus*. On weeds at Brook.

S. reptans, *Linnaeus*. This species is very common all round the Island, and grows on almost anything.

Caberea Boryi, *Audouin*. At Bonchurch (P.); on roots of *Laminaria* at Sandown, Shanklin, and Brook.

Bugula calathus, *Norman*. On roots of *Laminaria* at Brook. It is with a little doubt that this is recorded. In shape and size of cell and avicularium, and number of spines, the specimens found (five separate colonies) agree very well with Hincks' description. In manner of growth, however, they are smaller, and the cells are arranged in rows of 2—4 as against 3—9. There is no other species to which they can be referred, and they are probably a somewhat dwarf variety. Hincks only gives three localities for this, namely: Herm, South Devon, and Torbay.

Beania mirabilis, *Johnston*. On weeds at Shanklin (H. Lee).

Notamia bursaria, *Linnaeus*. On weeds at St. Helens, Gurnard, Whitecliff, and Hamstead.

Flustra foliacea, *Linnaeus*. The common "sea mat." Common on shells and stones on the more sandy shores of the Island.

F. securifrons, *Pallas*. On shells and stones at Ventnor (P.).

Membranipora Lacroixii, *Audouin*. On shells and stones at Hamstead.

M. catenularia, *Jameson*. On stones and shells off the Isle of Wight (W. Thomson).

M. pilosa, *Linnaeus*. On weeds, stones, shells, &c., very common all round the Island.

M. membranacea, *Linnaeus*. On *Zostera* at St. Helens.

M. lineata, *Linnaeus*. On shells at Hamstead; on fronds of *Laminaria* at Gurnard; on roots of *Laminaria* at Totland and Brook.

M. Dumerillii, *Audouin*. On shells at Hamstead; on roots of *Laminaria* at Brook.

M. Flemingii, *Busk*. On shells at Hamstead, Whitecliff, and Brook.

Cribrilina radiata, *Moll*. On shells at Hamstead.

Microporella ciliata, *Pallas*. On weeds at Ventnor (P.); Gurnard, Hamstead, and Sandown.

Schizoporella unicornis, *Johnston*. On weeds at Ventnor (P.).

S. spinifera, *Johnston*. On stems of weeds and roots of *Laminaria* at Gurnard, Hamstead, Totland, Whitecliff, Shanklin, Brook, and Ventnor.

S. simplex, *Johnston*. On shells at Ventnor (P.); and at Hamstead.

S. linearis, *Hassall*. On roots of *Laminaria* at Brook.

S. auriculata, *Hassall*. On stones and shells off the Isle of Wight (Busk).

S. hyalina, *Linnaeus*. On weeds and shells at Gurnard, Hamstead, Whitecliff, Totland Bay, Brook, and Ventnor.

Lepralia Pallasiana, *Moll*. On shells at Sandown and Hamstead.

L. foliacea, *Ellis & Solander*. On oysters off the Isle of Wight (Ellis); Thorness (F.M.).

Smittia trispinosa, *Johnston*. On shells at Ventnor (P.); on roots of *Laminaria* at Totland Bay.

Mucronella Peachii, *Johnston*. On shells at Hamstead and Brook.

M. ventricosa, *Hassall*. On shells at St. Helens (V.C.H.); also at Gurnard and Hamstead.

M. variolosa, *Johnston*. On shells at Thorness (F.M.); and at Hamstead.

M. coccinea, *Hincks*. On shells and roots of *Laminaria* at Totland Bay and Brook.

Cellepora pumicosa, *Linnaeus*. At Bonchurch (P.); a fragment in some shell sand from Brook (F.M.).

C. ramulosa, *Linnaeus*. Several fragments from shell sand from Brook (F.M.).

SUB-ORDER II. CYCLOSTOMATA, BUSK.

Crisia cornuta, *Linnaeus*. On weeds and shells at Whitecliff, Gurnard, Brook, Totland Bay, and Ventnor.

C. eburnea, *Linnaeus*. On weeds and shells, very common everywhere.

C. eburnea, *var. aculeata*. On weeds, fairly common everywhere.

C. denticulata, *Lamarck*. On weeds and shells at Whitecliff, Sandown, Shanklin, and Brook.

Idmonea serpens, *Linnaeus*. On shells at Hamstead and Brook.

Diastopora patina, *Lamarck*. At Bonchurch (P.); on roots of *Laminaria* at Totland Bay and Brook.

Lichenopora hispida, *Fleming*. At Bonchurch (P.); on roots of *Laminaria* at Totland Bay and Brook.

SUB-ORDER III. CTENOSTOMATA, BUSK.

Alcyonidium gelatinosum, *Linnaeus*. At Steephill Bay (P.).

A. hirsutum, *Fleming*. On stems of weeds at Gurnard, Shanklin, and Brook.

A. mytili, *Dalyell*. On *Fucus* at St. Helens (V.C.H.).

Flustrella hispida, *Fabricius*. On *Fucus* at Ventnor (P.); and at Gurnard.

Vesicularia spinosa, *Linnaeus*. At Ventnor (P.).

Amathia lendigera, *Linnaeus*. On weeds, very common everywhere.

Bowerbankia imbricata, *Adams*. On *Fucus* at Ventnor (P.).

B. pustulosa, *Ellis & Solander*. On weeds at Ventnor (P.).

Farella repens, *Farre*. At Ventnor (P.).

Cylindroecium dilatatum, *Hincks*. On tests of Ascidians at St. Helens (V.C.H.).

GROUP B. ENTOPROCTA, NITSCHÉ.

ORDER. PEDICELLINEA, HINCKS.

Pedicellina cernua, *Pallas*. At Ventnor (P.); on weeds at Totland Bay.

MOLLUSCA.

BY THE EDITOR.

THE Mollusca may be regarded as a sub-kingdom of the Animal World, and is divided into five classes, which, again, are subdivided into a very large number of orders and families, containing many thousands of species which are distributed throughout the World.

The group, taking land, freshwater, and marine species together, consists of many diverse forms, varying in size from some tiny marine species which are literally microscopic, to the giant Squid of Newfoundland and elsewhere—a model of one of these being exhibited in the Natural History Museum which is over 40 feet in length.

Typical Molluscs are snails and slugs, and the various species of bivalve shells which live in our ponds and streams. On the seashore, between tides, and in the deeper water beyond, are numerous univalve shells (Gastropoda), such as winkles and limpets; bivalve shells (Pelecypoda), such as oysters and cockles; tusk, or tooth, shells (Scaphopoda); mailed shells or chitons (Amphineura); and swimming freely in the sea—cuttle-fishes, squids, and octopuses (Cephalopoda).

The number of British species of Mollusca—land, freshwater, and marine, amounts to nearly 900, and of these rather more than a quarter have, up to now, been observed in or about the Island. It is evident from this small proportion that we may expect to discover many more yet—that is, of the marine species, for I consider our present list of the land and freshwater forms very satisfactory, and not far from complete.

As regards the structure and general habits of Mollusca, readers are referred to the text books, but so far as habitats are concerned many notes will be found scattered through the following lists.

A few words may be said here as to the marine zones in which Mollusca may be found: there is the Littoral zone, or the shore between high and low-water marks; the Laminarian, which extends from low-water mark to 10 fathoms; the Coralline is from 10 to 50 fathoms; and the Deep-sea from 50 fathoms upwards. This latter zone, however, does not concern us here in the Isle of Wight.

As regards books, the most serviceable to students of British marine Mollusca is "British Conchology," by J. G. Jeffreys, 1862. This is an illustrated work in 5 vols., and costs about £3. Another illustrated book which is useful in its way is "Our Country's Shells," by W. J. Gordon, pub. at 6/-. The book most used by those given to the study of the non-marine species is "The Collector's Manual of British Land and Freshwater Shells," by L. E. Adams, 1896; price 8/- plain, and 10/6 coloured. A very fine work, now being issued in parts, is a "Monograph of the Land and Freshwater Mollusca of the British Isles," by J. W. Taylor, but which, owing to its cost, will be beyond the means of the majority of collectors. As a general and comprehensive guide to the Mollusca, the volume of the "Cambridge Natural History" devoted to this subject, written by the Rev. A. H. Cooke, 1895, price 17/-, should be consulted. Another useful work is a "Manual of the Mollusca," by S. P. Woodward, 1880, price 6/-. Lists of all the British species of marine and non-marine Mollusca are issued by the Conchological Society at four pence and three pence each respectively, and should be in the hands of every student of Malacology.

In the compilation of the following lists, I am greatly indebted to the unfailing courtesy of the honorary secretary of the London branch of the Conchological Society, Mr. J. E. Cooper, who has seen specimens of practically the whole of my own finds, identifying many, and confirming or correcting the names of those determined by myself. This has been of great service to me, as my experience as a collector in this department of Natural History has been but a short one.

I have also to thank Mr. Hugh Findon for assisting me, indirectly, by naming a considerable number of specimens sent him by Mr. Poole, of Shanklin, whose records are included in these lists.

My thanks are also due to those observers who have supplied me with data as to their finds; and I am under an obligation to the authors of the following works which I have consulted and from which I have freely quoted:—

"Science Gossip" for 1898—an article on the Land and Freshwater Mollusca of the I. of W., by the late Chas. Ashford; and in the volume for 1901, a list of the Land and Freshwater Mollusca of Hampshire, by Lionel E. Adams, B.A., and B. B. Woodward, F.L.S. The "Victoria History of Hampshire and the Isle of Wight," Vol. I—an article on the Mollusca, by B. B. Woodward and L. E. Adams. Venables' "Guide to the Isle of Wight," 1860—a list of Land and Freshwater Shells, by G. Guyon, A. J. Hambrough, F.L.S., and A. G. More, F.L.S. Jeffrey's "British Conchology." The "Collector's Manual," &c.

In the following list of the land and freshwater species it will be found that several names are recorded for the Island for the first time, and additional information is given in regard to the comparative

frequency and distribution of many of the others. The number of species observed in the Island now stands at 93. But as regards the marine species, the difficulty in getting together a good list has been much greater. No list of these seems ever to have been published, which, as the writers of the "Victoria History" list remark, "is inexplicable." A few species are recorded for the Island in that work, but apart from these the list, numbering 140 species, given in the present volume is entirely new. Nearly the whole of these have been collected in the Littoral zone, either as living specimens, or as dead shells washed ashore from the Laminarian zone; though a few have been added from the miscellaneous contents of the lobster-pots brought in by the fishermen.

The following is a list of the various authorities whom I have quoted as responsible for the localities, &c., given either in published works or personally communicated to me. The initials of these observers are given in parentheses immediately following the localities or statements for which they vouch.

"Victoria History of Hampshire" (Vic. Hist.); "British Conchology" (Brit. Con.); A. G. More (A.G.M.); G. Guyon (G.G.); A. J. Hambrough (A.J.H.); Chas. Ashford (C.A.); A. Loydell (A.L.); H. F. Poole (H.F.P.); G. T. Woods (G.T.W.); John Taylor (J.T.); J. E. Cooper (J.E.C.); Lt.-Col. L. Worthington Wilmer (L.W.W.); J. C. Eccles (J.C.E.).

Mrs. E. J. Steeple, Messrs. P. Wadham and S. W. Pring, and others have also assisted by collecting and bringing me specimens.

As a matter of convenience, and following the usual custom, I propose dealing with the land and freshwater species as a separate group from the marine.

LIST OF I. OF W. NON-MARINE MOLLUSCA.

[The nomenclature is that of the Conchological Society's List issued in 1904.]

GASTROPODA

TESTACELLIDAE

Testacella haliotidea, *Draparnaud*. Mr. G. T. Woods tells me that he found several of these slugs when digging in his garden at Sandown. They were about a foot beneath the surface.

T. scutulum, *Sowerby*. Newport (J. W. Taylor). In about 1880, I saw specimens of *Testacella* which had been dug up in a garden near Westmill, Newport, which may have been of this species; Mr. F. Stratton has also seen examples in his garden at the Chantry House, Newport.

LIMACIDAE

Limax (Heynemannia) maximus, *Linné*. The species occurs commonly in gardens, &c., about Newport and elsewhere, but is less plentiful than some of the other slugs.

L. (Lehmannia) flavus, *Linné*. Steephill (A.J.H.); I. of W. (A.L.). Frequent in outhouses, amongst garden refuse, and sometimes beneath herbage, Newport, &c.

L. (Lehmannia) arborum, *Bouchard-Chantereaux* (= *marginatus*, *Müller*). Steephill (A.J.H.); Bembridge (A.G.M.); Ryde (W. Thompson); Thorley, two (C.A.). Beneath decaying log, Marvel Copse, also in Combley Wood.

Agriolimax agrestis, *Linné* (*Limax agrestis*). A variety of an opaque milky-white occurs (G.G.); Ventnor and Yarmouth (C.A.). An abundant species: it resorts indifferently to gardens, meadows, arable land, the open downs, hedge-banks, and woods, but seems most at home in wet places such as the margins of ponds and streams.

A. laevis, *Müller*. One specimen beneath rotten wood in copse, Sullens Farm. It crawled quickly and continuously about the plate I had put it on, and then suspended itself by a fine thread from the

edge of the plate, which I then raised to give it space to descend. It then lowered itself about a foot, feeling about with its tentacles for support, and it was still descending when I stopped it.

Milax sowerbyi, *Férussac*. Frequent at Bembridge (A.G.M.); common about Ventnor (G.G.). The species seems plentiful about Newport in fields and gardens; specimens occur commonly in my own garden and field at Newport which Mr. Roebuck pronounces to be the variety *pallidissima* of this species—a form rarely found in Britain; have seen an example of the var. *nigrescens* in lane near Marvel Copse.

M. gagates, *Draparnaud*. I. of W. (Forbes & Hanley).

ZONITIDAE

Vitrina pellucida, *Müller*. In damp places among moss, &c., Steephill (A.J.H.); Marshcombe Copse, Yaverland (A.G.M.); not uncommon about Ventnor (G.G.); Shanklin (H.F.P.). Frequent about Newport on hedge-banks and amongst dead leaves; a specimen found at Whitcombe was quite lively although it was mid-winter.

Vitrea crystallina, *Müller* (Zonites crystallinus). In moss, &c., Steephill (A.J.H.); in Shanklin Copse, frequent (G.G.); Centurion's Copse and Marshcombe Copse, with *purus* (*V. pura*) but rather more common (A.G.M.). In moss, Gatcombe; Carrion Pit, Arreton; damp ditch, Merston.

Y. (Polita) cellaria, *Müller* (Zonites cellarius). I have notes of this species from all parts of the Island, including the var. *albina* from Newport. It resorts to damp and shady places and seems to shun the light.

Y. (Polita) rogersi, *B. B. Woodward* (= *glabra*). I. of W. (A.L.). Beneath decaying log, Appleford; beneath stones in sand-pit and amongst decaying leaves, Marvel Copse.

Y. (Polita) alliaria, *Müller* (Zonites alliarius). Under damp, mossy stones, &c., Steephill (A.J.H.); Bembridge (A.G.M.); Alverstone (Ventnor Mus.). Beneath stone in sand-pit and amongst fallen leaves in ditch, Marvel Copse; Parkhurst Forest.

Y. (Polita) nitidula, *Draparnaud* (Zonites nitidulus). Abundant at Bembridge—more so than *Z. cellarius* (A.G.M.); common under stones in damp situations about Ventnor (G.G.); Ventnor and Yarmouth (C.A.); I. of W., fine (A.L.); Sandown and King's Quay (J.T.). On hedge-banks, in ditches, and in woods in many places.

Y. (Polita) pura, *Alder* (Zonites purus). In moss, &c., Steephill, where also the dark variety occurs (A.J.H.); abundant in Shanklin Copse (G.G.); Centurion's Copse, Bembridge; and Marshcombe Copse, Yaverland (A.G.M.); Bembridge Down (H.F.P.). In moss, Gatcombe; the var. *nitidosa* at Carisbrooke Castle; amongst moss, Parkhurst Forest; amongst fallen leaves in ditch, Marvel Copse.

Y. (Polita) radiatula, *Alder* (*Zonites radiatulus*). Totland Bay (J.E.C.); Bembridge (A.G.M.); near Ventnor (G.G.); Yarmouth (C.A.). Amongst moss and dead leaves, Marvel Copse; in moss, near Newport; beneath dead bird in pine wood, Blackwater.

Zonitoides nitidus, *Müller* (*Zonites nitidus*). St. Lawrence (A.J.H.); Lord Yarborough's pond (Sir W. Jardine); sides of ponds from Bonchurch to Ryde (A.L.). Beneath decaying log, Appleford; Westminster pond, Newport.

Z. excavatus, *Bean* (*Zonites excavatus*). Apse Woods, and among damp leaves and decayed wood at Alverstone (A.J.H.); I. of W. (Brit. Con.). One specimen on a fungus, America Woods, Shanklin. There are examples in the Ventnor museum from Alverstone. The species appears to be very local.

Euconulus fulvus, *Müller* (*Zonites fulvus*). Apse Woods (A.J.H.); near Bembridge (A.G.M.); in moss from Shanklin Copse (G.G.); Yarmouth (C.A.); at roots of plant, Rookley Wilderness (E. A. Butler). Beneath dead leaves, Marvel Copse.

ARIONIDAE

Arion ater, *Linné*. Common (G.G.); Yarmouth and Totland Bay (C.A.). Occurs commonly in the open country, in woods, marshes, on the downs, and near the sea. The examples I have seen have been mainly the typical black ones.

A. subfuscus, *Draparnaud*. Very common in own garden at Newport, sheltering beneath the plants by day and sallying forth to feed at dusk. Also in Combley Wood, Haven Street; on marshy land, Rookley Wilderness; beneath old board, Ningwood; amongst herbage at the edge of the Yar, near Brading; on lichen, Apes Down wood.

A. intermedius, *Normand* (= *minimus*, *Simroth*). Beneath rotten log in pine wood, Bowcombe; beneath stone in Carrion Pit, Arreton; beneath decaying log by roadside, near Bleak Down; at edge of the river Yar, near Brading; on fungus, Rookley; very common amongst decaying leaves, Marvel Copse; on fungi at Shanklin and on Bowcombe Down; in garden, Newport, but only one specimen.

A. hortensis, *Férussac*. Under fallen tree in wood, Bembridge (A.G.M.); common about Ventnor (G.G.); Hampstead Hill (C.A.). This little greyish-black slug is very plentiful in own garden and field and very destructive to plants; it occurs commonly in the open country, on the downs, and in woods.

A. fasciatus, *Nilsson* (= *bourguignati*, *Mabille*). I have not found this species common, but have seen a few specimens in gardens at Newport, amongst fallen leaves in Marvel Copse and at Staplers Copse, and one example on a fungus, Bowcombe Down.

ENDODONTIDAE

Punctum pygmaeum, *Draparnaud* (*Helix pygmaea*). Under pieces of limestone high up on the hill-side, Totland Bay (J.E.C.).

Sphyradium edentulum, *Draparnaud* (*Vertigo edentula*). A young specimen named by Mr. Alder has been taken by Rev. W. E. Hambrough at Alverstone, and another in Steephill quarry (Venables' Guide). One specimen in insect net when sweeping through herbage (including bracken) in Parkhurst Forest. Also one of the var. *columella* in hedge-bank, Bowcombe Down.

Pyramidula rupestris, *Draparnaud* (*Helix rupestris*). Yaverland (A.G.M.); abundant at Carisbrooke (Hall); it appears to be scarce in the I. of W. though common in the Isle of Portland under stones on the tops of walls (G.G.). The only locality that I am acquainted with for this little snail is the walls of Carisbrooke Castle: specimens may nearly always be found in the crevices of the stones in the outer walls.

P. (Gonyodiscus) rotundata, *Müller* (*Helix rotundata*). Very common under stones and in moss (G.G.); var. *turtoni*, Flem., I. of W. (A.L.); under logs of wood, St. Urian's Copse (J.T.); Shanklin (H.F.P.); Ventnor and Yarmouth (C.A.). Common throughout the Island under stones and logs of wood, beneath the loose bark of felled trees, in ditches and hedge-banks, amongst moss and dead leaves in woods, and occasionally on fungi.

HELICIDAE

Helicella (Heliomanes) virgata, *Da Costa* (*Helix virgata*). Grassy places, Steephill downs (A.J.H.); a small variety at Freshwater (Sir W. Jardine); common, especially in autumn when it swarms on hedge-banks and occurs of every variety from plain white to many striped (A.G.M.); at Ryde, and abundant throughout the Undercliff (G.G.); in profusion on Afton Down (Chalk); on hedges across the Island from Afton Down to Yarmouth (Tertiaries): var. *minor*, on Afton Down; var. *carinata*, a cream-coloured, bandless shell, near Yarmouth, approaches this variety; var. *nigrescens*, not uncommon on Afton Down; var. *leucozona*, with the last; vars. *subalbida* and *albicans*, near Yarmouth; var. *alba*, one, near Yarmouth; monstr. *sinistrorsum*, one, Afton; a depressed form with one zone of spots, north foot of Afton Down, numerous but very local; also the vars. *lutescens*, *maculata*, and *submaritima*; var. *albicans* at Newtown (C.A.). Abundant throughout the Island, especially on the downs and in the open country generally; it seems rather to avoid woods and marshes.

Helicella itala, *Linné* (*Helix ericetorum*). On long grass, Steephill (A.J.H.); not common at Brading (A.G.M.); frequent about the

cliffs, Ventnor (G.G.); on the down above Blackgang (J.T.); plentiful at the eastern end of Blackgang (G.T.W.); downs above Ventnor, and on Freshwater Down but not very numerous (C.A.); var. *hyalozonata*, I. of W. (A.L.). So far as my information goes the species seems to be confined to the downs at the south of the Island and occurs locally on these.

H. (*Candidula*) *caperata*, Montagu (*Helix caperata*). Yaverland (G.T.W.); with *virgata* and nearly as common; a rather darker variety is abundant in the shingle at Steephill Cove (G.G.); very frequent between Yarmouth and Freshwater on hedges; on Afton Down, small; var. *ornata*, fine and frequent, Yarmouth to Freshwater; vars. *obliterata* and *fulva* with the others; var. *alba*, at Yarmouth (C.A.); var. *obliterata*, colony at Freshwater Bay (C. E. Wright). I have found this species commonly on the downs, on hedge-banks, in quarries, gravel pits and sand pits, on "blown sand" by the sea, beneath stones, on trunk of elm tree, on the reclaimed land at Brading, and on rough land by the sea.

H. (*Cochlicella*) *barbara*, Linné (*Bulimus acutus* & *Helix acuta*). Freshwater Down (A.G.M.); between Freshwater and Brook (W. Thompson, 1841); Afton Down, very abundant; vars. *alba* and *strigata*, both on Afton Down, also var. *inflata*; var. *bizona*, a numerous colony on High Down, near Freshwater; var. *bizona*, also at Freshwater Bay (C.A.); var. *elongata*, the Needles; var. *strigata*, F. Bay (A.L.). This elegant snail seems to be confined to the western end of the Island. The colonies on certain parts of Afton Down, Freshwater Bay, and High Down are often very populous.

H. (*Theba*) *cantiana*, Montagu (*Helix cantiana*). Shanklin, Wroxall, and Yaverland (J.T.); a pale variety occurs near the high road, Ashey Down (G.T.W.); hedges and long grass, mostly on the Chalk; also at Ryde and near Bembridge (A.G.M.); Yarmouth, abundant on hedges (C.A.); on nettles, Ryde (L.W.W.). Occurs commonly on hedges and herbage throughout the Island; these snails reappear after hibernation about the end of April; they seem to prefer decaying or sickly vegetation to healthy plants; on nettles in pine wood, Bowcombe, and often on nettles elsewhere.

***Hygromia* (*Fruticicola*) *granulata*, Alder** (*Helix sericea*, *Jeffreys*). Local, under stones, at Wroxall (A.J.H.); Totland Bay (J.E.C.).

Hy. (*Fruticicola*) *hispida*, Linné (*Helix concinna*, *Jeffreys*). Under stones, Steephill (A.J.H.); abundant about Ventnor, the var. **concinna* in a field at Bank End and sparingly elsewhere (G.G.); Sandown (G.T.W.); Ventnor and Yarmouth; var. *nana*, frequent on St. Boniface Down (C.A.); var. *nana*, Freshwater (Metcalf); in garden, Ryde (L.W.W.); Limpet Run, near Sandown (J.T.). A remarkably small form of this species occurs sometimes in great abundance on the down above Alum Bay; var. *hispidosa* is common;

* Now regarded as the typical *Hy. hispida*.

var. *conica* also occurs; several specimens of var. *subglobosa* (H. sericea, *Drap.*) on the broken ground at Totland, and a good number of the same variety on the short turf of the lower slopes of Apes Down. The species is generally distributed and common throughout the Island.

Hy. (Fruticicola) rufescens, *Pennant* (*Helix rufescens*). In garden, Shanklin (H.F.P.); common about Sandown (G.T.W.); common everywhere under stones (G.G.); Ventnor, mostly light coloured; Thorley, plentiful; var. *alba*, also at Thorley (C.A.); var. *albocincta*, I. of W. (A.L.); garden, Ryde (L.W.W.). On stinging nettles, Carisbrooke; very plentiful in gardens; the species seems to have a liking for the blossoms of cultivated poppies; it is common almost everywhere on hedge-banks.

Acanthinula aculeata, *Müller* (*Helix aculeata*). In moss, &c., Bonchurch (A.J.H.); Centurion's Copse and Marshcombe Copse (A.G.M.); Shanklin Copse, not very abundant (G.G.); Totland Bay (J.E.C.); Ventnor (J.C.E.).

Vallonia pulchella, *Müller* (*Helix pulchella*). Under stones and damp clods on Bembridge Down (Miss F. M. More); on the walls of Quarr Abbey (A.G.M.); the var. *costata*, Müller, more common than type in I. of W. (A.L.); St. Lawrence (J.C.E.). One specimen on a caddis-case in pond, Heytesbury Farm.

V. costata, *Müller* (*H. pulchella* v. *costata*). Common about Ventnor (G.G.); Bembridge Down (J.T.). At roots of grass and under stones, Carrion Pit, Arreton; amongst the short grass on Bowcombe Down, Pan Down, and Carisbrooke Castle; beneath stone on reclaimed land, Brading.

***V. excentrica**, *Sterki*. At roots of grass, Carisbrooke Castle; beneath stones, Carrion Pit, Arreton.

Helicigona lapicida, *Linné* (*Helix lapicida*). Under stones in damp places, the Landslip, Bonchurch (A.J.H.); Pelham Wood, Ventnor (G.G.); common about Shanklin; on damp evenings coming to "sugar" (H.F.P.); the Undercliff (J.T.); on one occasion crawling about in great numbers at St. Lawrence during rainy weather (G.T.W.); Appuldurcombe (C.A.). A single dead specimen washed down by the stream on to the shore at Gurnard Bay; this is the only record for the northern half of the Island.

H. (Arianta) arbustorum, *Linné* (*Helix arbustorum*). Damp banks and hedges, Steephill and St. Lawrence (A.J.H.); Pelham Wood (G.G.); common on the slopes of Shanklin Down; at Shanklin the var. *fuscescens* is equally common as the type (H.F.P.); in moist places at Adgestone and Newchurch (G.T.W.); one specimen of var. *albina*, Moq. (A.L.); Steephill Down (J.C.E.). On heap of decaying vegetable refuse, Shide; on stinging nettles, Newport. This species, though plentiful where it occurs, is decidedly local.

* I have followed the C.S. list in recording these three forms of *Vallonia* as different species, but there seems to be considerable doubt as to whether they should not be regarded as varieties of one species.

Helix (Helicogena) aspersa, Müller. Common everywhere; the monst. *scalaris* (*scalariforme*), with elevated spire and looser whorls, has been observed near Ventnor by Dr. Gray (G.G.); the var. *albofasciata* occurs at Carisbrooke (C.A.); var. *exalbida*, I. of W. (A.L.); vars. *exalbida* and *undulata* both taken at Shanklin (H.F.P.). This species, the common garden snail, is but too plentiful in gardens, and sheltered places elsewhere, but avoids, as a rule, the open downs, pine woods, and bogs.

H. (Cepaea) nemoralis, Linné. Shanklin and Alverstoke (H.F.P.); Adgestone and Blackgang, and sparsely at Redcliff (J.T.); Hamstead and Totland Bay, sparingly (C.A.). Fairly common about Ventnor, in several varieties, during some seasons, but scarce at other times; single specimens at Newport, Marvel Copse, Rookley Wilderness, and America Woods; a few by the shore at Newtown; several amongst rushes on the broken ground at Totland Bay.

H. (Cepaea) hortensis, Müller. Plentiful at Shanklin in many varieties (H.F.P.); Adgestone and Newchurch, and plentiful at St. Lawrence (G.T.W.); much more common than *nemoralis*; Yarmouth and Freshwater, plentiful; var. *lutea* at Yarmouth (C.A.). The writers of the Mollusca list in the "Victoria History," say: "This (*hortensis*) is rather more local in the county than the last species (*nemoralis*)." This may be so on the mainland, but in the Island "white mouths" greatly preponderate over "brown mouths"—to the extent, perhaps, of a hundred or two hundred to one. In ordinary seasons this pretty snail abounds on hedges and bushes throughout the Island, but during the last three summers, 1906-7-8, they have been comparatively scarce.

ENIDAE

Ena obscura, Müller (*Bulimus obscurus*). Frequent under stones (G.G.); under bark, Luccombe, and Greatwoods Copse, Shanklin (H.F.P.); under stones, near Culver Cliffs (J.T.); broken ground on the Gault near Redcliff (G.T.W.); St. Boniface Down and Steephill Cove (C.A.); Ventnor (A.L.). Also on cliff, Totland; on bank, Carisbrooke; in quarry, Ventnor; amongst dead leaves, Whitcombe; hedge-bank, Bowcombe; crevice of wall, Carisbrooke Castle; on bank, Tolt Copse; Marvel Copse—usually single specimens only.

STENOGYRIDAE

Cochlicopa lubrica, Müller. Greatwoods Copse (H.F.P.); frequent in moss and beneath stones, Centurion's Copse and St. Helens Spit (A.G.M.); Steephill (A.J.H.); the Undercliff (G.G.); copse near Yarmouth (C.A.); var. *hyalina*, I. of W. (A.L.); Ventnor

(L.W.W.); Sandown (J.T.). Also in Carrion Pit, Arretton; moist bank by a ditch, Marvel; in garden, Shanklin; amongst moss, Marvel Copse; St. Boniface Down; at roots of grass, Carisbrooke Castle; Totland Bay; bank of the Yar at Brading.

Caecilioides acicula, *Müller* (*Achatina acicula*). Above chalk-pit on Afton Down, two, July, 1879 (C.A.); Ventnor and Totland Bay (Vic. Hist.); a dead specimen at roots of herbage, Steephill Cove (H.F.P.). One dead shell on the cliff near the beach west of Ventnor; and one on hedge-bank, Convent Lane, near Newport.

VERTIGINIDAE

Jaminia (Abida) secale, *Draparnaud* (*Pupa secale*). On limestone rocks, local but not scarce, Steephill (A.J.H.); near the parsonage, Ventnor (G.G.); abundant on the south face of St. Boniface Down, and in chalk pits on Afton and Freshwater Downs (C.A.); a colony on the face of the cliff near Blackgang Chine (A.L.); abundant at Sconce, near Yarmouth (J.E.C.). Amongst limestone on the broken ground at Totland Bay. Decidedly local but plentiful where it occurs.

J. (Lauria) cylindracea, *Da Costa* (*Pupa umbilicata*). I have records of this species from all parts of the Island. It occurs commonly amongst the short turf of the downs, in crevices of stone walls, under stones, amongst rocks, in hedge-banks, adhering to brick walls, on cliffs, amongst moss, and in gardens; var. *albina* occurs in own garden, Newport.

J. muscorum, *Linné* (*Pupa marginata*). Bembridge Down in several places (Miss More); Steephill (A.J.H.); common about Ventnor, but rather less so than *umbilicata*; a toothless var. (*edentula*) occurs (G.G.); under stones in old chalk pits at the base of Bembridge Down (G.T.W.); Ventnor, Steephill, and Norton (C.A.); on sea-cliffs at Steephill (H.F.P.). Locally common on Bowcombe Down; at roots of grass, St. Boniface and Arretton Downs; also at Brook and Parkhurst.

Vertigo (Isthmia) minutissima, *Hartmann*. Under stones on the shore, St. Lawrence (A.J.H.); Ventnor: sub-fossil in calcareous loam (Vic. Hist.); Steephill, two (C.A.); Undercliff, I. of W. (Brit. Con.); one specimen beneath stone near Luccombe Chine (H.F.P.); Luccombe (Ventnor Mus.).

Y. (Alaea) antivertigo, *Draparnaud*. Upon stones and aquatic plants in marshy places, Steephill and near Woolverton (A.J.H.); Colwell Bay (Alder); Ventnor, rare (A.L.).

Y. (Alaea) pygmaea, *Draparnaud*. Copse north of road between Ventnor and Steephill (Sir W. Jardine); under stones and in moss, Steephill Cove (A.J.H.); under pieces of limestone high up on the hill-side, Totland Bay (J.E.C.); Hamstead Hill, under old bricks (C.A.); there are specimens from Steephill in Ventnor Museum.

Y. (Alaea) moulinsiana, *Dupuy*. Two specimens of this very local shell were found by Mr. E. A. Butler and myself at the roots of rushes in a marshy place on the broken ground at Totland Bay, and another example was found by Mr. Butler in a marshy spot between Brading and Bembridge.

CLAUSILIIDAE

Balea perversa, *Linné*. Trunks of trees, &c., in woods, Steephill and St. Lawrence (A.J.H.); Quarr Copse and Centurion's Copse (A.G.M.). Crevices in stone walls at Cowes, Car. Castle, and Gatcombe Church; on trunk of elm, Newport; Marvel Copse; on brick wall in own garden, Newport. Not very common.

Clausilia (Marpessa) laminata, *Montagu*. Under bark, Luccombe; also in Greatwoods Copse, coming to "sugar" (H.F.P.); the Landslip (J.T.); St. Urian's Copse (G.T.W.); in moss about trees, &c., Steephill (A.J.H.); near Bembridge (A.G.M.); Shanklin Copse and Pelham Wood (G.G.); hedge on down above Ventnor (C.A.). Also on decayed tree trunk, Bowcombe, one of these being var. *pellucida*; amongst dead leaves, Car. Castle; on beech trunk, Tolt Down; and on trunk of elm tree.

C. (Pirostoma) bidentata, *Ström* (*C. rugosa*). Common and generally distributed throughout the Island. It occurs on hedgebanks, tree trunks, beneath loose bark, under stones, in the crevices of stone walls, in ditches, amongst dead leaves, and at the roots of plants.

SUCCINEIDAE

Succinea putris, *Linné*. This species seems to be restricted to the edges of drainage trenches and ditches, the margins of streams, and marshy places, where it occurs commonly on flags, rushes, and various other water-loving plants. It has been noticed at Sandown, Alverstone, Ventnor, Centurion's Copse, Blackwater, Marvel, Rookley Wilderness, Brading, and Yarmouth.

S. elegans, *Risso*. This species (or variety, as some regard it) occurs in similar situations as the last, and the two may often be found together. It has been noticed in the marshes between Sandown and Brading; on reeds, Rookley Wilderness; at Totland Bay; Carisbrooke Pond; and Westminster Pond, Newport.

* **S. oblonga**, *Draparnaud*. At Totland and Freshwater Bays (Vic. Hist.).

* It is probable that this record refers to specimens of this shell found by Prof. E. Forbes and others in an alluvial deposit at Totland and Freshwater, and not to the living molluscs of this species.

AURICULIDAE

Carychium minimum, Müller. Frequent in damp moss, &c., Steephill (A.J.H.); Marshcombe Copse and Centurion's Copse (A.G.M.); Shanklin Copse, and mossy stones on the borders of a stream by Woolverton (G.G.); Hamstead Hill, in damp places (C.A.); beneath bush on the broken ground at Totland Bay (Butler); specimens in Ventnor Mus. labelled "Ventnor." A few have also been found about Newport and Carisbrooke.

LIMNAEIDAE

Ancylus fluviatilis, Müller. This little freshwater limpet is abundant in most of the streams, and in ditches where there is frequently running water, throughout the Island. It adheres to stones and to the stems and leaves of water plants.

Acroloxus lacustris, Linné (*Ancylus lacustris*). Several shells of this species were found attached to caddis-cases, along with *Limnaea*, *Planorbis*, &c., in a pond at Heytesbury Farm.

Limnaea (Radix) pereger, Müller (*L. peregra*). This, the commonest of the water snails, may be found in ponds and streams throughout the Island. Mr. A. G. More, writing in 1860, says: "Of every variety from the narrow and elongated shell of the main stream of the Yar to the broad variety of stagnant water which resembles *L. auricularius*; fine examples of the latter occur in the small pond at Bonchurch; it is the only one of the I. of W. air-breathing Molluscs which I have found in brackish water."

L. (Radix) auricularia, Linné. Specimens have been taken by Mr. J. Taylor (of Sandown) in Sandown marshes and near Brading. I also took several at the margin of a pond, Brading, some twenty years ago. These wide-mouthed shells have previously been regarded by collectors in the Island as a variety of *L. peregra* approaching *L. auricularia* (see last par.), but Messrs. J. E. Cooper, J. W. Taylor, and F. Taylor having seen specimens all agree that they should be referred to the species, *L. auricularia*.

L. palustris, Müller. In the ditches near Sandown Fort, in the East Yar by Yar Bridge, and in a pond at the entrance to Sandown, but in all localities sparingly (A.G.M.); var. *elongata*, I. of W. (W.J.); on the banks of drainage trenches, Sandown Marshes (J.T.). I have two from Carisbrooke Pond and one from Westminster Pond—the species seems far from common.

L. truncatula, Müller. This small water snail is common in ponds and ditches and at the edge of streams in many places. It has been noticed at St. Lawrence, by the Yar and Medina, at Steephill Cove, St. Helens, Totland Bay, Thorley, Norton, Combley Wood, Carisbrooke, Blackgang, Brading, and Newport.

L. stagnalis, Linné. Pond near Haven Street (George); Bonchurch Pond (Mrs. Peck).

Planorbis (Gyraulus) albus, *Müller*. Abundant in Sandown Marshes and in the Medina (A.G.M.); Alverstone (A.J.H.); St. Lawrence (Vent. Mus.). Plentiful in Carisbrooke Pond, Westminster Pond, and the pond at Heytesbury Farm; occurs also in small streams in various places.

P. (Gyraulus) crista, *Linné* (*P. nautilus*). Lord Yarborough's pond (Sir W. Jardine); Westover (A.J.H.). Two specimens in Carisbrooke Pond and four in Westminster Pond.

P. carinatus, *Müller*. Common in the ditches in Sandown Marshes, and in the Yar itself above Yar Bridge (A.G.M.); Sandown Marshes (J.T. & G.T.W.).

P. umbilicatus, *Müller* (*P. complanatus*). Pond at St. John's, Ryde (A.G.M.). On water plants in the Yar near Brading, several in Westminster Pond, and one in Carisbrooke Pond.

P. vortex, *Linné*. In the pond of the garden at St. John's, Ryde (A.G.M.); ditches, Yarmouth (C.A.).

P. spirorbis, *Linné*. Sandown Marshes (J.T.); pond, Staplers (Miss Hearn); Steephill Pool (G.G.); pond, Shanklin (H.F.P.); at roots of rushes in marshy place between Brading and Bembridge (Butler); Yarmouth (C.A.); common in every pond and stream, and one of the few shells yielded by the Medina (A.G.M.). In reference to this last statement, Mr. More must have been thinking of the southern part of the Island, as this shell is quite absent from several of the ponds and streams about Newport and Carisbrooke.

P. (Bathyomphalus) contortus, *Linné*. Westover and Alverstone (A.J.H.); Sandown Marshes (H.F.P.). Common in Carisbrooke Pond and Westminster Pond.

PHYSIDAE

Physa fontinalis, *Linné*. Abundant everywhere in Sandown Level; also near Ryde, and in the Medina (A.G.M.); St. Lawrence (Vent. Mus.). Plentiful in the large ponds at Carisbrooke and in Westminster Pond; in small stream, Freshwater, and elsewhere.

Aplecta hypnorum, *Linné* (*Physa hypnorum*). Plentiful in a pond at the entrance to Sandown, and occurs sparingly in ditches near to Sandown Fort (A.G.M.).

PALUDESTRINIDAE

Paludestrina stagnalis, *Baster* (*Hydrobia ulvae*). Abundant beneath stones, &c., at, and above, high-water mark, on the banks of the creek at King's Quay (G.T.W.); Ryde (L.W.W.); Ventnor (J.C.E.); beneath piece of wood near the Newtown river on land then dry but liable to be flooded by brackish water (H.F.P.). In profusion beneath stones and on the mud between tides in the back-water, St. Helens; in enormous numbers on the shores of the Medina Estuary; abundant beneath stones in the salt-marsh near

the beach, Yarmouth—some of these had crawled up the sedges and were living as ordinary land-snails.

Bithynia tentaculata, *Linné*. Sandown (Vent. Mus.). A few specimens on stones in small stream, Freshwater; several in Carisbrooke Pond, and a fair number in Westminster Pond; in stream, Shide, &c. Local, and not very common.

VALVATIDAE

Valvata piscinalis, *Müller*. Everywhere in the East Yar from Alverstoke to its mouth (A.G.M.); plentiful in Sandown Marshes (J.T.). Dead shells are frequent on the shores of the Medina Estuary below Newport Quay; amongst these are some of the var. *subcylindrica*; plentiful in Carisbrooke Pond, including some of the var. *depressa*; pond at Blackwater Mill, &c.

POMATIIDAE

Pomatias elegans, *Müller* (*Cyclostoma elegans*). Generally distributed; the var. *pallida* somewhat rare in the Island (A.L.); common near Bembridge, and especially abundant on the Chalk (A.G.M.); Pelham Wood, the Landslip, &c. (G.G.); crawling on grassy banks, &c., after rain, Steephill (A.J.H.); common on Shanklin Down (H.F.P.); very abundant at Yaverland (G.T.W.); Ventnor, Thorley, and Norton (C.A.); Carisbrooke (L.W.W.). Also about Newport, East Standen, Gatcombe, Bowcombe Down, Long Lane, Tolt Down, Totland Bay, Garstons Down, and Apes Down. It seems to avoid pine woods and marshes.

ACICULIDAE

Acicula lineata, *Draparnaud*. There are some examples in the Ventnor Museum labelled "Ventnor."

PELECYPODA

UNIONIDAE

Anodonta cygnaea, *Linné*. Common in Sandown Marshes, both in the Yar and in the ditches which drain the marshes (A.G.M.). The foregoing statement refers to var. *anatina* which is still plentiful in the Eastern Yar.

CYRENIDAE

Sphaerium corneum, *Linné*. Abundant in many of the ditches in Sandown Level, also in a pond near Ryde (A.G.M.); Alverstone (J.T.); pond at Staplers (Miss Hearn). Very common in the ponds at Heytesbury Farm, in the large ponds at Carisbrooke, and in Westminster Pond.

S. lacustre, *Müller*. Sandown, by the causeway (A.G.M.); Bonchurch Pond (G.G.); between Sandown Fort and Yar Bridge (A.J.H.); Sandown Marshes near the Fort (J.T.). On caddis-cases, in pond, Heytesbury Farm; var. *ryckholti* in considerable numbers in dry bed of pond, St. George's Down.

Psidium amnicum, *Müller*. In the Medina near Blackwater Mill, and in the East Yar by the causeway across Sandown Marshes (A.G.M.); one valve on Shanklin beach (H.F.P.).

P. subtruncatum, *Malm* (= *fontinale*, *Jeffreys*). Occurs in the large ponds at Carisbrooke and in Westminster Pond.

P. pulchellum, *Jenyns* (*Jeffreys* includes this species amongst the vars. of *P. fontinale*). Steephill (A.J.H.); stream at Bonchurch (G.G.); the Medina near Blackwater, the East Yar and Sandown Marshes (A.G.M.); pond, Yarmouth (C.A.); Sandown (Vent. Mus.).

P. pusillum, *Gmelin*. Abundant in the East Yar, and in ditches in Sandown Marshes, also in the Medina (A.G.M.); stream near Woolverton (G.G.); in small stream below the cliffs, Shanklin (H.F.P.). The var. *cinerea* also occurs, according to Mr. More, in a pond near the Priory. The species is plentiful in Carisbrooke Pond and Westminster Pond.

P. nitidum, *Jenyns*. Pond near Fivens, St. Helens (A.G.M.).

P. gassiesianum, *Dupuy* (= *roseum*, *Jeffreys*). Sandown Marshes (J.T.). Common in Westminster Pond, also in Carisbrooke Pond; a number of specimens on caddis-cases, in pond, Heytesbury Farm.

CENSUS OF MOLLUSCA FOUND IN MY OWN GARDEN.

As supplementary to the foregoing list, I give here an actual census of the snails and slugs destroyed as the result of a series of "snail hunts" instituted in my own garden at Newport, on several occasions during the summers of 1907-8. All sorts and conditions were collected, named, counted, and consigned to the brine-pot; partly for economic reasons, and partly for the interest of ascertaining how many species, and individuals of each kind, might be found living and feeding together in the small area chosen for investigation—the portion of the garden dealt with measuring about 24 yards by 12 yards. It is almost enclosed by walls and buildings, and in many ways may be regarded as a favourable and happy hunting ground for Molluscs. The subsoil is London Clay, and the elevation above sea-level about 80 feet.

The following list gives the numbers of each of the eighteen species found during these several "hunts," but allowance should be made in comparing these figures for the probability, or even certainty, that the larger and more conspicuous species would have been (unintentionally) collected more closely than the smaller and more obscure forms. There is good reason to believe, too, that a more prolonged and careful search would add several additional species to this list even within this confined area.

<i>Helix aspersa</i>	...	...	...	936
<i>Arion hortensis</i>	...	...	...	402
<i>Hygromia rufescens</i>	...	...	...	264
<i>Arion subfuscus</i>	...	...	...	161
<i>Pyramidula rotundata</i>	...	...	...	84
<i>Vitrea cellaria</i>	...	...	...	84
<i>Jaminia cylindracea</i>	...	...	...	23
<i>Milax sowerbyi</i>	...	...	...	23
<i>Helix hortensis</i>	...	...	...	19
<i>Agriolimax agrestis</i>	...	...	...	18
<i>Limax maximus</i>	...	...	...	7
<i>Limax flavus</i>	...	...	...	3
<i>Arion fasciatus</i>	...	...	...	3
<i>Helicella cantiana</i>	...	...	...	2
<i>Vitrea nitidula</i>	...	...	...	1
<i>Clausilia bidentata</i>	...	...	...	1
<i>Arion intermedius</i>	...	...	...	1
<i>Balea perversa</i>	...	...	...	1
Total ...	...	...	...	2033

LIST OF I. OF W. MARINE MOLLUSCA.

[The nomenclature is that of the Conchological Society's List, 1902.]

AMPHINEURA

CHITONIDAE

Craspedochilus cinereus, *Linné* (*Chiton marginatus*). Common on stones and clay boulders, St. Helens (Vic. Hist.); on rocks at the base of the Culvers (H.F.P.); attached to oyster shell, Hampstead (D. Leighton). Adhering to the under part of stones in rock pools, Freshwater Bay; Brighstone; adhering to rocks between tides, Gurnard and Thorness Bays; beneath stones in the backwater, St. Helens.

Acanthochites fascicularis, *Linné* (*Chiton fascicularis*). Adhering to stones between tides, Gurnard and Thorness Bays.

A. discrepans, *Brown* (*C. discrepans*). *Zostera* bed, St. Helens (Vic. Hist.). This species, according to Jeffreys, is extremely local in Britain.

PELECYPODA

NUCULIDAE

Nucula nucleus, *Linné*. Ventnor (J.C.E.). Frequent on the beach at Gurnard; a few amongst shell-sand at Shanklin; sometimes common on the sandy beach at Brook.

Nuculana minuta, *Müller* (*Leda minuta*). Ventnor (J.C.E.).

ANOMIIDAE

Anomia ephippium, *Linné*. On *Zostera* bed, St. Helens (Vic. Hist.); Ryde (L.W.W.); Sandown and Shanklin, but not very common (H.F.P.). Very plentiful between Thorness and Newtown, some of these at low water being alive and attached to stones and shells; attached to the roots of *Laminaria* washed ashore at Brook; single valves are common on the north shores of the Island, but less frequent on the south.

MYTILIDAE

Mytilus edulis, *Linné*. The common Mussel. Plentiful in many places: attached to rocks between tides; in the crevices of sea walls; on the timber structure of piers; and frequently at the roots of *Laminaria* and other seaweeds.

Volsella modiolus, *Linné* (*Mytilus modiolus*). Uncommon on the shore: one specimen at Brook.

V. barbata, *Linné* (*Mytilus barbatus*). The Bearded Mussel. *Zostera* bed, St. Helens (Vic. Hist.); occasionally at Shanklin (H.F.P.). At roots of *Laminaria* washed ashore at Sandown.

Modiolaria marmorata, *Forbes*. Ventnor (J.C.E.); one specimen at Shanklin (H.F.P.).

M. costulata, *Risso*. One washed up alive in roots of tangle, Shanklin (H.F.P.).

M. discors, *Linné*. One washed up alive in roots of tangle, Shanklin (H.F.P.). Amongst shell-sand between Shanklin and Horseledge, also at Brook; attached to roots of *Laminaria* washed ashore at Brook.

OSTREIDAE

Ostrea edulis, *Linné*. The Oyster. Empty shells are washed ashore on most parts of the coast, but principally on the shores of the Solent. Oyster culture is carried on in the Island—both in the Medina Estuary and at Newtown.

PECTINIDAE

Pecten maximus, *Linné*. The sands, Ryde (L.W.W.). Also washed ashore at St. Helens.

P. (Hinnites) pusio, *Linné*. Several washed up at Brook.

P. (Chlamys) varius, *Linné*. Single valves are frequent on most of our shores; a number of very young specimens in shell-sand, Brook; a live example in roots of *Laminaria* washed ashore at Sandown.

P. (Aequipecten) opercularis, *Linné*. The sands, Ryde (L.W.W.); single valves occasionally washed up at Shanklin (H.F.P.). Also at Thorness, Compton Bay, and Brook.

ASTARTIDAE

Goodallia triangularis, *Montagu* (*Astarte triangularis*). Ventnor (J.C.E.).

LUCINIDAE

Loripes lacteus, *Linné*. Ryde (J.C.E.).

LEPTONIDAE

Kellia suborbicularis, *Montagu*. Whitecliff Bay (H.F.P.). Three examples washed up at Brook.

Lasaea rubra, *Montagu*. Single valves in shell-sand, Horseledge, near Shanklin; two specimens of the white variety, also examples of the type, at Brook.

SCROBICULARIIDAE

Syndosmya alba, *Wood* (*Scrobicularia alba*). Washed up every winter at Shanklin (H.F.P.). Also at Gurnard, Newtown, and Brook.

S. tenuis, *Montagu* (*Scrobicularia tenuis*). The empty shells of this species may sometimes be found in thousands at high-water mark in the Medina Estuary a mile or two below Newport; plentiful on the mud in the backwater, St. Helens.

Scrobicularia plana, *Da Costa* (*S. piperata*). Common on muddy shores: Medina Estuary, Ryde, Woodside, Gurnard, Thorness, and especially plentiful at Hampstead.

TELLINIDAE

Tellina fabula, *Gronovius*. Brook, one specimen.

Macoma balthica, *Linné* (*Tellina balthica*). The sands, Ryde (L.W.W.); Cowes (H.F.P.). Common on the shores of the Medina Estuary; also at Gurnard, Thorness, St. Helens, Woodside, Hampstead, and Yarmouth.

DONACIDAE

Donax vittatus, *Da Costa*. Two examples at Ryde (J.C.E.). Also one at Brook.

MACTRIDAE

Macra stultorum, *Linné*. The sands, Ryde (L.W.W.); washed up occasionally in stormy weather at Shanklin (H.F.P.). Also at Brook.

Spisula solida, *Linné* (*Macra solida*). The sands, Ryde (L.W.W.). Young shells in sand at Horseledge and Brook.

S. elliptica, *Brown* (*Macra elliptica*). Two single valves at Brook.

S. subtruncata, *Da Costa* (*Macra subtruncata*). Occurs commonly at most places on the north shore of the Island, but is less frequent in the south.

VENERIDAE

Lucinopsis undata, *Pennant*. The sands, Ryde, common (L.W.W.).

Dosinia exoleta, *Linné* (*Venus exoleta*). Fairly common: Yarmouth, Hampstead, Woodside, Ryde, St. Helens, Shanklin, Compton Bay.

Venus (Ventricola) verrucosa, *Linné*. In sandy gravel, St. Helens (Vic. Hist.); the sands, Ryde (L.W.W.). Also at Yarmouth, Woodside, Newtown, and Brook, but not very common.

Tapes aureus, *Gmelin*. In sandy gravel, St. Helens, common (Vic. Hist.); the sands, Ryde (L.W.W.); one at Shanklin (H.F.P.). Several at Woodside; frequent all along the shore between Thorness and Newtown; also at Hampstead and Yarmouth.

T. virgineus, *Linné*. The sands, Ryde (L.W.W.). Also a young shell at Brook: the species is apparently rare in the Island.

T. pullastra, *Montagu*. In muddy gravel or sand, St. Helens, common (Vic. Hist.); in the deserted holes of *Saxicava rugosa*, Whitecliff Bay (G.T.W.); the var. *perforans* was formerly common on the rocks at Small Hope, Shanklin (H.F.P.); the sands, Ryde (L.W.W.). Plentiful all along the shore between Gurnard and Newtown; the rugose var. *perforans* common at Brook and Thorness; a living example of *perforans* in roots of *Laminaria* at Brook.

T. decussatus, *Linné*. The sands, Ryde (L.W.W.); Hampstead (H.F.P.). Also at Yarmouth, Thorness, Gurnard, Woodside, St. Helens, and Medina Estuary.

CARDIIDAE

Cardium aculeatum, *Linné*. One valve drifted up at Ryde (L.W.W.).

C. exiguum, *Gmelin*. Common at various places on the north shore of the Island: less frequent on the south side. A thinner form with a good bit of colour, probably a brackish-water variety, occurs on the mud in the backwater, St. Helens.

C. edule, *Linné*. Common Cockle. Very plentiful in many places on the north shore, also in the Medina Estuary, but less common on the southern shores of the Island; the brackish-water var. *rustica*, Jeff., occurs in profusion on the mud in the backwater at St. Helens.

C. (Laevicardium) norvegicum, *Spengler*. Drifted up at Ryde (L.W.W.). Also a single valve on Shanklin beach.

MYIDAE

Mya arenaria, *Linné*. One washed up at Shanklin (H.F.P.). Dead shells are frequent on the shores of the Medina Estuary, and occasionally live specimens are washed up.

M. truncata, *Linné*. The sands, Ryde (L.W.W.); one washed up at Shanklin (H.F.P.). Several single valves on the shore between Thorness and Newtown.

Sphenia binghami, *Turton* (*Mya binghami*). Ventnor (Vent. Mus.); at roots of *Laminaria*, Sandown, also at Shanklin (H.F.P.). Fairly common amongst shell-sand at Horseledge and Brook; at roots of *Lam. digitalis*, Brook.

Corbula gibba, *Olivé*. Single specimens at Yarmouth, Gurnard, and Brook.

SOLENIIDAE

Ensis ensis, *Linné* (*Solen ensis*). Sandown Bay (G.T.W.); Bembridge (Vic. Hist.); the sands, Ryde (L.W.W.); washed up at Shanklin during rough weather (H.F.P.). Also at Brook and St. Helens.

E. siliqua, *Linné* (*S. siliqua*). Priory Bay, St. Helens (Vic. Hist.); may be dug out of the sand at low water, Sandown Bay (G.T.W.); the sands, Ryde (L.W.W.); washed up at Shanklin during rough weather (H.F.P.).

Solen vagina, *Linné*. Sandown (G.T.W.); washed up at Shanklin during rough weather (H.F.P.). Also at Compton Bay, Gurnard, Thorness, St. Helens, Ryde, Woodside, and Newtown.

SAXICAVIDAE

Saxicavella plicata, *Montagu* (*Panopea plicata*). Jeffreys mentions that Mr. Hanley found single valves near the pier at Ryde (Brit. Con.).

Saxicava rugosa, *Linné*. Dead specimens in lumps of chalk washed up at Whitecliff Bay (H.F.P.). Young specimens in shell-sand at Horseledge and Brook.

GASTROCHAENIDAE

Gastrochaena dubia, *Pennant*. One specimen at Whitecliff Bay (H.F.P.).

PHOLADIDAE

Pholas dactylus, *Linné*. The Piddock-shell. Ryde (J.C.E.); St. Helens (G.T.W.); Bonchurch (Mrs. Peck). Also at Gurnard, Thorness, Newtown, Hampstead, Yarmouth, Woodside, and Brook. A common species.

Barnea candida, *Linné* (*Pholas candida*). Plentiful between Thorness and Newtown, imbedded in stiff clay and marl towards low water; great numbers are sometimes thrown up on to the sandy beach at Brook; also at Gurnard, Woodside, Yarmouth, Hampstead, and Sandown. The species is gregarious.

B. parva, *Pennant* (*Pholas parva*). Sparingly at Thorness and Brook.

TEREDINIDAE

Teredo navalis, *Linné*. One specimen on the beach at Gurnard.

PANDORIDAE

Pandora inaequalis, *Linné*. Occasionally at Shanklin (H.F.P.); Ryde (J.C.E.). Also at Woodside, Gurnard, Thorness, and Yarmouth, but usually only single specimens.

SCAPHOPODA

DENTALIIDAE

Dentalium vulgare, *Da Costa* (*D. tarentinum*). Tusk-shell. One specimen from a crab-pot, Sandown (G.T.W.). Occasional specimens washed up at Brook, Brighthstone, St. Helens, Gurnard, and Thorness.

GASTROPODA

PATELLIDAE

Patella vulgata, *Linné*. Common Limpet. Abundant all round the coast wherever there are rocks; and living in some numbers on the iron sewer-pipes which run into the sea near Totland Bay.

Helcion pellucida, *Linné*. At the roots of *Laminaria* thrown up on the beach, Sandown (G.T.W.); plentiful on *Laminaria* a little below low water, off the Culvers (J.T.). Young shells occur in abundance in shell-sand at Horseledge and Brook: at the latter place I noticed a number of living specimens at the roots of *Lam. digitalis* which had been washed ashore. Shells are occasionally washed up at Freshwater, Yarmouth, Gurnard, and Brighstone.

ACMAEIDAE

Acmaea virginea, *Müller* (*Tectura virginea*). St. Helens (Vic. Hist.); Ventnor (J.C.E.). Several specimens in shell-sand at Horseledge and Brook.

FISSURELLIDAE

Emarginula fissura, *Linné*. Occasionally at Shanklin (H.F.P.); Ventnor (J.C.E.). Single specimens at Brook and Horseledge.

E. conica, *Schumacher* (*E. rosea*). Ventnor (J.C.E.).

Fissurella graeca, *Linné*. Key-hole Limpet. A few washed up at Shanklin after a storm (H.F.P.). Several shells on the beach, Brook, and one at Gurnard.

TROCHIDAE

Gibbula magus, *Linné* (*Trochus magus*). Painted Top-shell. St. Helens, empty shells only, but common (Vic. Hist.); several live specimens on the sand near low water, St. Helens (G.T.W.); in crab-pots, Sandown (G.T.W.); Ryde (J.C.E.); drifted up from the Solent (L.W.W.); Compton Bay (Miss Hearn). Empty shells are common along the beach from Thorness to Newtown: amongst these was one living specimen. Shells are washed up also at Woodside, Gurnard, Cowes, Yarmouth, Shanklin, and Brook.

G. tumida, *Montagu* (*T. tumidus*). Several examples at Ryde (J.C.E.).

G. cineraria, *Linné* (*T. cinerarius*). Grey Top-shell. Plentiful everywhere in the Littoral zone on rocks, in pools, and on *Fucus*. At Thorness I have noticed green seaweed growing from the shells of living specimens.

G. umbilicata, *Montagu* (*T. umbilicatus*). Occasional specimens at Shanklin, and on rocks at low water off the Culvers (H.F.P.); one at St. Helens (Miss Hearn). Common on stones and seaweed

in rock pools, Freshwater Bay; dead shells on the sands at Ryde; one shell near Newtown.

Calliostoma exasperatum, *Pennant* (*T. exasperatus*). Sandown (J.C.E.); one at Shanklin (H.F.P.). Two shells washed up at Brook.

C. zizyphinus, *Linné* (*T. zizyphinus*). Large numbers of this handsome shell are brought ashore by fishermen in their lobster-pots, as this species, like many others, has a liking for the bait which these pots contain; though many of these shells are old ones occupied by hermit-crabs. Living specimens may be found occasionally on rocks towards low water. Empty shells, washed up, are not infrequent on all parts of the coast.

CYCLOSTREMATIDAE

Delphinoidea nitens, *Philippi* (*Cyclostrema nitens*). Ventnor (J.C.E.).

TURBINIDAE

Phasianella pullus, *Linné*. Pheasant-shell. Living specimens at low water, Shanklin (H.F.P.); Ventnor (J.C.E.). Common in shell-sand at Horseledge, Brighstone, and Brook; sparingly at Gurnard; one of these shells at Brook was tenanted by a tiny hermit-crab.

LITTORINIDAE

Lacuna crassior, *Montagu*. I. of W. (J.C.E.); one at Horseledge (H.F.P.). Two at Freshwater, and three at Brook.

L. divaricata, *Fabricius*. Common on *Zostera* at St. Helens (Vic. Hist.); I. of W. (J.C.E.). Alive on seaweeds at low water, Shanklin; plentiful amongst shell-sand between Shanklin and Horseledge; also in shell-sand at Brook.

L. parva, *Da Costa* (*L. puteolus*). I. of W. (J.C.E.). Common amongst shell-sand at Brook, also between Shanklin and Horseledge.

L. pallidula, *Da Costa*. I. of W. (J.C.E.); St. Helens (G.T.W.). On rocks and seaweed at low water, near Shanklin; fairly common in shell-sand at Brook and Horseledge.

Littorina obtusata, *Linné*. The var. *ornata* abounds in the I. of W. (Brit. Con.). Very abundant on rocks and *Fucus* in the Littoral zone all round the Island, and on shingle and weeds in the Medina Estuary. Very variable as regards colour and markings.

L. rudis, *Maton*. The small Winkle. St. Helens, in millpond, with *Paludestrina stagnalis* (Vic. Hist.); King's Quay (J.T.). Plentiful on stones and mud in the Medina Estuary; on stones and mud in profusion, between tides, in the backwater, St. Helens: in this locality the variety of colour and markings is very great amongst these shells; on the mud in Newtown creek; on rocks and *Fucus* all round the coast, from low water to the upper limit of the tide.

L. littorea, *Linné*. Common Winkle. Plentiful on rocks, *Fucus*, &c. all round the coast; empty shells are cast up in vast numbers at the upper limit of the tide near the Newtown river. A fisher-boy, on the shore at Hampstead, told me that from May to August winkles were breeding and were not fit for food: I understand, however, that large numbers are sold at Billingsgate during the summer.

RISSOIDAE

Rissoa parva, *Da Costa*. At the base of the Culvers, and at Horseledge, Shanklin (H.F.P.); Ventnor, including the var. *interrupta* (J.C.E.). This species may sometimes be found in thousands amongst shell-sand between Shanklin and Horseledge: out of about a quart of this sand obtained there, I picked out more than 2000 small shells (comprising 50 species), and of these fully three-quarters consisted of *R. parva* in great variety of form and colour. It is plentiful in shell-sand at Brook—amongst these being var. *interrupta*; occurs also at Brighstone.

R. inconspicua, *Alder*. One specimen in shell-sand, Brook.

R. violacea, *Desmarest*. Ventnor, several specimens (J.C.E.). Three in shell-sand, near Horseledge.

R. guerini, *Récluz* (*R. costulata*). The var. *costulata*, *Alder*—the type, according to the C.S. list, appears not to occur in Britain—is mentioned by Hanley as having been found at Ryde. Some worn shells found at Horseledge appear to be of this species.

Manzonias costata, *J. Adams* (*R. costata*). Ventnor (J.C.E.). Amongst shell-sand between Shanklin and Horseledge, and at Brook.

Zippora membranacea, *J. Adams* (*R. membranacea*). Common beneath stones and on the mud in the backwater, St. Helens; a few washed up at Yarmouth, Thorness, and Brook.

Onoba striata, *J. Adams* (*R. striata*). Ventnor (J.C.E.). Plentiful in shell-sand at Brook and Horseledge.

Cingula semistriata, *Montagu* (*R. semistriata*). Amongst shell-sand between Shanklin and Horseledge; plentiful in shell-sand, Brook, including a few of var. *pura*.

Galeodina carinata, *Da Costa* (*R. striatula*). Ventnor (J.C.E.). A few in shell-sand at Horseledge and Brook.

ASSIMINEIDAE

Paludinella littorina, *Delle Chiaje* (*Assiminea littorina*). White-cliff Bay (Forbes).

ADEORBIDAE

Adeorbis subcarinatus, *Montagu*. Sandown (J.C.E.). Several in shell-sand at Horseledge and Brook.

SKENEIDAE

Skenea planorbis, *Fabricius*. The var. *hyalina* at Ventnor (J.C.E.). In shell-sand, Horseledge and Brook.

HOMALOGYRIDAE

Homalogyra rota, *Forbes & Hanley*. Jeffreys, in "Brit. Con.," mentions this species as occurring in the I. of W. It is to be found in rock pools amongst seaweeds, and is the smallest known species of British shells.

TRUNCATELLIDAE

Truncatella truncata, *Montagu* (= *truncatula*). In considerable numbers at King's Quay (G.T.W. & J.T.).

CAPULIDAE

Capulus hungaricus, *Linné*. One specimen from a crab-pot, Sandown (G.T.W.).

CYPRAEIDAE

Trivia europaea, *Montagu* (*Cypraea europaea*). Cowry. Cast up on the shore at Shanklin, Brook, Brighstone, Compton, Yarmouth, and Gurnard. Frequent, but not very common.

NATICIDAE

Natica (Lunatia) sordida, *Philippi*. One at Sandown (G.T.W.); several at Shanklin (H.F.P.). I, also, have found one or two at Shanklin at the spot where the fishermen empty their crab and lobster-pots: they get brought ashore mixed with *N. catena*.

N. (Lunatia) catena, *Da Costa*. Necklace Natica. Sandown (G.T.W.); Shanklin (H.F.P.); a large living specimen taken at Ryde when shrimping (G. W. Colenutt). These shells are brought ashore in crab-pots in considerable numbers at Sandown, Shanklin, Freshwater, and elsewhere. This species, being an animal feeder, is believed to be greatly responsible for the small round holes often found in the shells of bivalves, the *Natica* adopting this plan so as to devour the inmates.

N. (Lunatia) alderi, *Forbes*. Several specimens turned out of a crab-pot at Freshwater.

LAMELLARIIDAE

Lamellaria perspicua, *Linné*. St. Helens, extremely abundant on compound Ascidians in *Zostera* bed, the various colours of which it mimics (Vic. Hist.); occasionally cast ashore at Shanklin (H.F.P.).

Velutina laevigata, *Pennant*. One specimen in shell-sand, Brook.

CERITHIIDAE

Bittium reticulatum, *Da Costa* (*Cerithium reticulatum*). Ventnor (J.C.E.); Shanklin (H.F.P.).

Cerithiopsis tubercularis, *Montagu*. Ventnor (J.C.E.).

SCALIDAE

Cioniscus albidus, *G. Adams* (*Aclis unica*). One specimen of this minute but beautiful species occurred in shell-sand, Horseledge.

PYRAMIDELLIDAE

Odostomia plicata, *Montagu*. One example in shell-sand, Brook.

Brachystomia rissoides, *Hanley* (*Odostomia rissoides*). Ventnor (J.C.E.).

Pyrgulina interstincta, *Montagu* (*O. interstincta*). Ventnor (J.C.E.).

Spiralinella spiralis, *Montagu* (*O. spiralis*). One specimen in shell-sand at Horseledge.

Turbonilla lactea, *Linné* (*O. lactea*). Two in shell-sand, Horseledge, and one at Brook.

T. pusilla, *Philippi* (*O. pusilla*). Ventnor (J.C.E.).

EULIMIDAE

Eulima polita, *Linné*. One in shell-sand at Horseledge.

TURRITELLIDAE

Turritella communis, *Lamarck* (*T. terebra*). Two specimens brought up in a prawn-pot by fishermen off Shanklin (H.F.P.).

BUCCINIDAE

Buccinum undatum, *Linné*. Common Whelk. A plentiful species: empty shells get washed up on all parts of the coast; in March have seen live specimens cast up at Shanklin; between Yarmouth and Hampstead boys walk along the flat, muddy shore towards low water, and collect the living molluscs for food; living whelks get into the crab-pots for the bait and are brought ashore by the fishermen, but many of those turned out of the pots at the fishers' huts were taken in by their occupants—the hermit-crabs; the bunches of egg-capsules of this species are one of the commonest objects of our shores.

Neptunea antiqua, *Linné* (*Fusus antiquus*). Common at Hampstead crawling on the mud at low water, the shells looking almost as worn as the dead specimens cast up on the beach, most of them having broken mouths, and some with seaweeds growing from them (H.F.P.); Ryde (J.C.E.); St. Helens (E. J. Steeple); Brook (Miss Hearn). The species seems most common on the line of shore between Thorness and Yarmouth.



H. F. Poole, photo.

SQUID (LOLIGO FORBESI).

Captured in herring-net off Shanklin. Length from tip of shortest tentacle to end of body, $13\frac{1}{2}$ inches.

MURICIDAE

Ocenebra erinacea, *Linné* (*Murex erinaceus*). A very common species: empty shells may be found washed up on all parts of the coast; large numbers are turned out of the crab and lobster-pots at all the fishing stations, and many of these are found to be tenanted by young hermit-crabs which had entered the pots for the sake of the bait.

Purpura lapillus, *Linné*. This shell is found commonly all round the coast, between tide-marks, on rocks, *Fucus*, in rock pools, &c., and is sometimes brought ashore in crab-pots.

NASSIDAE

Nassa reticulata, *Linné*. Very common, as dead shells, on all our shores—it seems to live mostly in the Laminarian zone; thousands are brought ashore in the crab, lobster, and prawn-pots, into which they swarm for the sake of the bait; frequently young hermit-crabs take possession of these shells; the egg-capsules of this mollusc are interesting objects, and may often be picked up on the beach.

N. incrassata, *Ström*. Shanklin, but not common—sometimes brought ashore in prawn-pots (H.F.P.). Common on the sandy beach at Brook and Compton Bay; only occasionally noticed on the north shores of the Island.

PLEUROTOMIDAE

Bela turricula, *Montagu* (*Pleurotoma turricula*). One specimen on the beach at Sandown (J.T.).

B. rufa, *Montagu* (*P. rufa*). Not very common: Yarmouth, Thorness, Gurnard, St. Helens, Freshwater, Brook, and Shanklin.

TORNATINIDAE

Tornatina obtusa, *Montagu* (*Utriculus obtusus*). The Solent (Brit. Con.). There are specimens in the Ventnor Museum labelled "Ventnor," and I have taken several in shell-sand at Horseledge.

SCAPHANDRIDAE

Scaphander lignarius, *Linné*. One turned out of a crab-pot at Sandown (G.T.W.).

BULLIDAE

Haminea hydatis, *Linné* (*Bulla hydatis*). Cast up alive on the beach at Shanklin (H.F.P.). Occasionally in the Medina Estuary, and at Gurnard and Thorness.

Acera bullata, *Müller*. Bembridge Harbour, on mud flats (Vic. Hist.). In abundance on the mud amongst *Zostera* in the back-water, St. Helens.

PHILINIDAE

Philine aperta, *Linné*. Several cast up alive on the beach at Shanklin (H.F.P.); Spithead (Vic. Hist.). Single specimens in shell-sand at Horseledge and Brook.

APLYSIIDAE

Aplysia punctata, *Cuvier*. The Sea-hare. One specimen of a pale-purplish colour in rock pool, Brook, in July (D. Leighton).

PLEUROBRANCHIDAE

Pleurobranchus plumula, *Montagu*. St. Helens (Vic. Hist.).

ELYSIIDAE

Elysia viridis, *Montagu*. One beneath *Fucus* on a rock at Horseledge, near Shanklin; and another found by Mr. Poole in the same place.

DORIDIDAE

Archidoris tuberculata, *Cuvier* (*Doris tuberculata*). On the sponge, *Halichondria panicea*, the Solent (Vic. Hist.).

POLY CERIDAE

Palio lessoni, *D'Orbigny* (*Polycera lessoni*). St. Helens, on green weeds (Vic. Hist.); a specimen of the var. *ocellata* (*Polycera ocellata*, A. & H.) amongst the corallines in a rock pool at Shanklin (H.F.P.).

Acanthodoris pilosa, *Müller* (*Doris pilosa*). St. Helens, on *Fucus* and other weeds (Vic. Hist.).

Ancula cristata, *Alder*. St. Helens (Vic. Hist.); several on the rocks at the base of the Culvers (H.F.P.).

OTINIDAE

Otina otis, *Turton*. Several specimens amongst shell-sand, Brook.

AURICULIDAE

Leuconia bidentata, *Montagu* (*Melampus bidentatus*). Under stones between tide-marks, Whitecliff Bay: appears to feed on decaying seaweeds (W. Garstang). In June, 1883, I found a number of this species adhering to rocks just above high-water mark in this same bay.

Alexia denticulata, *Montagu* (*Melampus myosotis*, v. *ringens*). Several examples of the type were found by me in shell-sand at Brook, as also one of the var. *myosotis*, *Drap.* Several of the var. *myosotis* were noticed by Mr. E. A. Butler at roots of plants in the salt marshes near the beach, Yarmouth; others were found at King's Quay by Mr. J. Taylor.



H. F. Poole, photo.

EGG-RIBBON OF *ANCULA CRISTATA*.



H. F. Poole, photo.

ANCULA CRISTATA, CRAWLING.

Nat. size : photographed through the water.



H. F. Poole, photo.

SEA-SLUGS (*ANCULA CRISTATA*),
nat. size : as exposed on rock at low tide.

CEPHALOPODA

LOLIGINIDAE

Loligo forbesi, *Steenstrup*. Taken off Shanklin by fishermen in their herring nets. The species occurs not infrequently during the herring season, and the men say it is not unusual to find several of these squids in their net at the same time, though weeks may pass without them taking any. They are highly valued as bait (H.F.P.).

L. media, *Linné*. A specimen mentioned in the "Vic. Hist." as having been taken off Netley in trawl, must have passed the Island on its way to Southampton Water, so must be included in this list.

SEPIIDAE

Sepia officinalis, *Linné*. Common Cuttle. This species is common off the Island, and the conspicuous white "shells" are one of the familiar sights of the seashore. Mr. Poole tells me that in August, 1899, he noticed hundreds of tiny *Sepia* shells—they were a quarter of an inch, or less, in length—at the edge of the water between Shanklin and Horseledge, and Mr. Cooper, having seen specimens, believes them to be the young of *S. officinalis*: it would seem that some sudden fatality had overtaken a shoal of these little creatures.

S. elegans, *D'Orbigny* (= *biserialis* & *ruppellaria*). Found four shells of this species cast up on the beach at Brook amongst a number of *S. officinalis*.

SEPIOLIDAE

Sepiola atlantica, *D'Orbigny*. Spithead, in trawl (Vic. Hist.).

Rossia macrosoma, *Delle Chiaje*. I. of W. (Brit. Con.).

INTRODUCTION

A specimen of *Ostrea angulata*, Lam., a species which has been introduced and cultivated on our oyster beds, was picked up on Ryde beach by Mr. G. W. Colenutt.

ERRATICS

The following four species of West Indian shells were found on the sands at Compton Bay by Miss Hearn, of Staplers: *Columbella mercatoria*, Gmel.; *Polinices porcellanea*, D'Orb.; *Bulla striata*, Brng.; *Olivella nivea*, Gmel. As this is an unfrequented part of the coast I can only surmise that they were washed ashore from some shipwreck. I remember well, how, many years ago, a quantity of mother-of-pearl shell, which had formed part of the cargo of a wrecked ship, was washed ashore in the neighbourhood of Blackgang, and got distributed for a mile or two along the shore, and how, many months afterwards, some of these pearly pieces could still be found.

Another shell from the West Indies, *Littorina trochiformis*, Dillw., was picked up on Shanklin beach by Mr. Poole.

ARACHNIDA.

BY FRANK P. SMITH.

THE large and important class Arachnida comprising the Spiders, Harvestmen, Scorpions, Pseudo-scorpions, Mites, and a few less familiar creatures, has never really been a favourite one with naturalists, as may be gathered from the fact that, at the present time, it would be difficult to find, in the whole of the British Isles, a score of individuals seriously engaged upon the study of one or more of its component orders. It follows, therefore, that only a comparatively few areas in Britain have been at all systematically searched by experts, the greater part being still *terra incognita* as far as Arachnids are concerned.

The Isle of Wight must be included in this latter category. The present list has been compiled from collections made by Mr. Morey and forwarded to me from time to time; from a list kindly communicated by the Rev. John E. Hull, the author of some valuable papers on North Country spiders; the list in the "Victoria County History (Hampshire)," by Mr. F. O. Pickard-Cambridge; and from a collection made by myself during a few days' stay in the Island in September, 1907. The number of species recorded is 153, and although this is a fairly creditable total, I am convinced, even from my own very slight acquaintance with the Island, that this list could be enormously increased, probably to twice its present size, by a few seasons of diligent work.

I have made no attempt to give a list of the Acaridea (mites), as very few have been collected. The order, however, is a very large and widely distributed one, and the Island would no doubt furnish a long list if carefully worked.

A few words as to the distinguishing characteristics of the orders represented in the present list may, perhaps, be of interest. The Spiders (Araneidea) form a large and well-known group, and can be easily recognised. The body is sharply divided into two parts: the anterior, known as the cephalo-thorax, consisting of the head

and thorax welded together; and the posterior, known as the abdomen, being devoid of segments, but bearing, at or near its posterior extremity, the spinning organs, and beneath, towards its fore part, the chief breathing apertures, two or four in number. The eyes are simple, and, in all British species, either six or eight in number. The falces, attached to the front of the cephalo-thorax, are a pair of prominent and highly modified organs, each furnished with a movable fang which is pierced with a duct through which poison can be forced into the body of a victim. The legs are eight in number, a fact which will readily distinguish a spider from any insect. The palpi are five-jointed organs, somewhat resembling an additional pair of short legs, and are placed one on each side of the head. In the male, the last joint of each palpus is furnished with curious, often highly complicated, organs which are employed in the process of reproduction.

A harvestman (Order, Phalangidea) can be easily distinguished from a true spider by the fact that its body is all in one piece—head, thorax, and abdomen being welded together. The eyes are two in number, placed one upon each side of a small protuberance on the upper part of the head. The legs are long and slender, usually excessively so, and the last joint is often composed of a great number of “false joints,” somewhat resembling a string of cylindrical beads. The harvestmen are devoid of spinners, their falces are simple pincers without a poison gland, and the palpus of the male is devoid of any special reproductive organ. The true Scorpions (Scorpionidea) are not represented in Britain. The Pseudo-scorpions (Chernetidea) are creatures of small size bearing a striking resemblance to miniature tailless scorpions. Their real affinities are, however, rather with the mites than with the true scorpions.

There is no time of the year at which adult specimens of Arachnids may not be found, but certain seasons are far more productive than others. Immature specimens are, in many cases, quite unrecognisable. The method of collecting Arachnids of all kinds is simple in the extreme; they should be merely dropped, as caught, into a small phial of methylated spirit, in which the specimens may be kept until they are required for examination, or for transmission to an authority for identification. On no account should they be allowed to become dry. It is advisable to carry several tubes of spirit, keeping one especially for very small specimens, which are liable to be injured by the struggles of the larger and more powerful ones if only a single tube be used. When sending a tube of spiders through the post, a plug of cotton-wool should be placed in it and pushed right down into the spirit so as to just touch the mass of specimens at the bottom. This prevents the spiders from shaking about and from thus losing the leg-spines, these being most important characters for identification.

Spiders may be obtained in plenty at all seasons. During the spring and summer they abound amongst low herbage, running and

leaping in the sunshine. In the autumn the species which construct orb-webs are greatly in evidence, whilst during the winter months large numbers of very small but extremely interesting species may be found amongst dead leaves in woods, under débris in ditches, amongst the accumulations at the base of hay-stacks, beneath loose bark, and in many similar situations. These small spiders are generally of a dark brown or blackish colour, and are very numerous in species. They should be particularly searched for by anyone desirous of adding to a local list, for, by reason of their small size, obscure habits, and season of maturity they are usually overlooked by casual collectors.

The harvestmen are rather rare during the greater part of the year, but appear in profusion during the autumn, hence their popular name in this country and its French equivalent of "Faucheur" (reaper). Most of the species may be at once recognised by their excessively long and slender legs, which seem in some instances to be attenuated to an almost absurd degree, the genus *Liobunum* being a case in point. It will be admitted, however, by anyone who has collected these creatures that they are able to make good use of their limbs, especially when running on herbage. I once dropped a phalangid into a case containing a captive wolf-spider—*Trochosa ruricola*—a creature which would have weighed quite three times as much as the intended prey. The harvestman, when attacked, raised its body out of the spider's reach, lifting any leg which was in danger of a bite. I was much interested in this performance, but regarded it merely as a very novel method of self-defence. I was the more surprised, therefore, upon seeing the phalangid drop suddenly upon the unprotected back of the spider and with its pair of pincer-like falces literally shear its way into the vitals of its massive opponent, who speedily expired. The normal food of the phalangids consists of small insects of many kinds, and for this reason they should be encouraged, together with the spiders, in our gardens.

The pseudo-scorpions or chelifers are not as a rule very abundant and require a good deal of close search to reveal their whereabouts. They occur beneath stones and loose bark, under old boards, amongst débris of all kinds, and are not infrequently found attached to the legs of flies.

In conclusion I might perhaps advocate one or more of the orders of the Arachnida as a subject for anyone desirous of making a systematic study of some branch of Natural History. I will not deny the fact that there are difficulties to be faced, not the least being the lack of encouragement which one meets with when working upon an unpopular subject. The beginner has, however, the consolation of knowing that he may be sure to find the advanced workers in a field where mercenary gain is out of the question and popular encouragement is at a minimum, really enthusiastic naturalists who are ever willing to assist him in his early struggles with the puzzling problems of identification.

The following three books on British Spiders can be recommended: "A History of the Spiders of Great Britain and Ireland," by John Blackwall, 1861; "British Spiders," by E. F. Staveley, 1866; "Spiders of Dorset, with appendix describing other Brit. species," by Rev. O. Pickard-Cambridge, 1879.

ORDER. ARANEIDEA.

SUB-ORDER. MYGALOMORPHAE.

FAMILY. ATYPIDAE.

Atypus affinis, *Eichw.* Found by Mr. Hull. On the mainland this is a southern form. Probably it is not nearly so rare as the difficulty of discovering it has led many writers to suppose.

SUB-ORDER. ARACHNOMORPHAE.

SECTION I.

The spiders in this section are all provided with a special spinning organ, known as the cribellum, from which a peculiar flocculent web is produced.

FAMILY. DICTYNIDAE.

Ciniflo similis, *Bl.* (= *Amaurobius similis*, *auct.*). Common everywhere in holes in walls, fences, &c., also under boards in out-houses. The opening is surrounded by a small sheet of flocculent web, which, when fresh, is often of a bluish tint. The spider generally seizes its victim by one leg and drags it into its den.

C. ferox, *Walck.* Newport. This atrocious-looking spider is found under boards and stones, usually in outhouses and cellars.

Dictyna uncinata, *Thor.* Adult in Parkhurst Forest in September. It spins a small shapeless snare on the tops of gorse and other similar plants.

D. latens, *Fabr.* Adults in Parkhurst Forest, September.

D. pusilla, *Thor.* Recorded by Mr. Hull.

D. flavescens, *Walck.* Recorded by Mr. Hull.

Protadia subniger, *Camb.* Recorded by Mr. Hull.

SECTION II.

This section, in which the cribellum is absent, includes the majority of the spiders.

FAMILY. DYSDERIDAE.

Dysdera crocota, *C. L. Koch.* A female in a garden, Newport, in June.

- D. cambridgii**, *Thor.* A male in Parkhurst Forest, September.
Harpactes hombergii, *Scop.* Both sexes at Carisbrooke in April.
Segestria senoculata, *Linn.* Recorded by Mr. Hull.

FAMILY. DRASSIDAE.

- Gnaphosa lapidosa**, *Walck.* (= *Drassus lapidosus*, *auct.*). Adult females in September, garden, Newport.
Scotophaeus sericeus, *Bl.* (= *Drassus blackwallii*, *auct.*). Adult females running in house at night, Newport.
Prosthesima latreillei, *Sim.* Both sexes adult in Parkhurst Forest, amongst coarse grass, September.
P. subterranea, *C. L. Koch.* Recorded by Mr. Hull.
Micaria pulicaria, *Sund.* Adult males, Parkhurst Forest, September.

FAMILY. CLUBIONIDAE.

- Clubiona terrestris**, *Westr.* Adults in October. Marvel Copse.
C. holosericea, *Linn.* (= *C. pallidula*, *Clk.*). Recorded by Mr. Hull.
C. reclusa, *Camb.* Near Newport.
C. trivialis, *C. L. Koch.* Parkhurst Forest, September.
C. comta, *C. L. Koch.* Amongst débris in garden, Newport, September.
C. brevipes, *Bl.* Recorded by Mr. Hull.
Chiracanthium lapidicolens, *Sim.* Immature specimens, apparently of this species, were not uncommon in Parkhurst Forest in September.
Ch. carnifex, *Fabr.* Recorded from Arreton Down by Mr. Hull.
Agroeca brunnea, *Bl.* Adult females, Parkhurst Forest, September.
A. proxima, *Camb.* Adult females, Parkhurst Forest, September.
A. inopina, *Camb.* A rare species of which an adult female was taken by Mr. Morey at Marvel Copse in July.
Zora spinimana, *Sund.* (= *Zora maculata*, *auct.*). Immature specimens plentiful in Parkhurst Forest during September.
Phrurolithus festivus, *C. L. Koch* (= *Micariosoma festivum*, *auct.*). Adults in Parkhurst Forest, in September.

FAMILY. MICROMMATIDAE.

- Micrommata accentuata**, *Walck.* (= *Anyphaena accentuata*, *auct.*). Recorded by Mr. Hull.

FAMILY. PHILODROMIDAE.

- Thanatus striatus**, *C. L. Koch.* Immature specimens very plentiful in Parkhurst Forest, September.

Tibellus oblongus, *Walck.* Plentiful in several districts. Adult females in August.

Philodromus aureolus typ., *Oliv.* Abundant in various localities.

P. aureolus cespiticolis, *Walck.* Recorded by Mr. Hull.

P. dispar, *Walck.* Several localities near Newport.

FAMILY. THOMISIDAE.

Oxyptila blackwallii, *Sim.* This curious little crab-spider, easily recognised by its adornment with numerous club-shaped spines, occurred at Marvel Copse, but no adults were taken.

O. sanctuaria, *Camb.* This small but well-marked spider is rare, although not quite as much so as is generally supposed. A male occurred in Marvel Copse in September.

O. praticola, *C. L. Koch.* Recorded by Mr. Hull.

O. trux, *Bl.* Recorded by Mr. Hull.

Xysticus viaticus, *Linn.* (= *X. cristatus*, *Clk.*). Common on all parts of the Island.

X. lanio, *C. L. Koch.* Recorded by Mr. Hull.

X. erraticus, *Bl.* An adult male of this fine species occurred in Parkhurst Forest in September. The dissimilarity of the two sexes is extremely pronounced in this, and several allied species.

X. kochii, *Thor.* Immature specimens which I feel pretty confident should be placed under this species occurred in Parkhurst Forest during September. Throughout this genus, however, it is impossible to be quite sure of the identity of a species until mature examples are obtained.

Misumena calycina, *Linn.* (= *M. vatia*, *Clk.*). This spider was abundantly represented by immature specimens in Parkhurst Forest and other localities during September. It hides in various flowers, such as those of the Guelder Rose, many of the Umbelliferae, and some of the orchids. Luckless insects which arrive in quest of honey fall a prey to the waiting spider, whose pale tints render it almost invisible.

Thomisus onustus, *Walck.* Immature specimens of this strikingly beautiful spider have been recorded by Mr. Hull.

FAMILY. SALTICIDAE.

This family includes the Jumping Spiders, easily recognized by their habits, and by the four enormous eyes which are placed upon the front of the head. They are exceedingly abundant in the tropics, and are far commoner in the South than in the North of England. The Isle of Wight, when carefully worked, should produce a long list of these interesting spiders, of which over thirty species are already recorded as British.

***Salticus scenicus*, Linn.** This common and well-known "Zebra spider" occurs plentifully upon garden walls and fences. Adult in summer and autumn.

***Heliophanus flavipes*, Hahn.** Females occurred at Pan Down and Parkhurst Forest during September.

***H. cupreus*, Walck.** Recorded by Mr. Hull.

***Marpessa melanognatha*, Lucas.** Recorded in "Victoria History."

***Enophrys frontalis*, Walck.** Females occurred in Parkhurst Forest during September.

***Neon reticulatis*, Bl.** Recorded by Mr. Hull.

***Ballus depressus*, Walck.** Recorded by Mr. Hull.

***Hasarius blancardi*, Scop.** (= *H. falcatus*, Clk.). Parkhurst Forest.

Myrmarachne formicarius (= *Salticus formicarius*, Blackwall & Cambridge; *Toxus formicarius*, F. P. Smith). This is by far the most striking spider which the Island has produced, and must be looked upon as one of the greatest prizes with which the diligent collector may hope to be rewarded. During the last half-century only four specimens have been recorded as captured in Britain, and in widely distant localities—Southend, Eastbourne, Hampshire, and Scotland. On the 9th of September, 1907, I was fortunate enough to discover this species in Parkhurst Forest, where, low down in the grass and protected by the gorse, it constructs a delicate silken tube, from the shelter of which it sallies out in search of prey. The immature spider bears a striking resemblance to an ant (*Formica rufa*) which occurs commonly in the same locality, but the adult male is rather too large and richly coloured to pose as a really good ant-mimic.*

FAMILY. AGELENIDAE.

***Tegenaria ferruginea*, Panz.** (= *T. derhamii* & *T. domestica*, auct.). Common in houses everywhere.

***T. atrica*, C. L. Koch.** Under overhanging roots, near Newport.

***T. sylvestris*, L. Koch.** Adult females at Marvel Copse in September.

***Agelena labyrinthica*, Linn.** This spider, whose huge funnel-shaped snares upon bushes and low herbage are familiar objects to every naturalist, is quite common in the Island. Adult in autumn.

FAMILY. HAHNIDAE.

***Antistea elegans*, Bl.** Recorded by Mr. Hull.

* Since this list was written, I have received a letter from Mr. H. Donisthorpe who tells me that he has taken both males and females of this rare species at Sandown during August of this year. They were very ant-like in appearance and were running about in the company of *Myrmica scabrinodis* (Editor).

FAMILY. ARGYRONETIDAE.

Argyroneta aquatica, *Linn.* This, the sole representative of the family, and well known as the "water spider," has occurred near Carisbrooke. It constructs a silken tent under water and fills it with air which is carried down, a bubble at a time, by the spider. The male is considerably larger than the female, this being an unusual state of affairs amongst the spiders. For this reason, probably, the sexes live together in harmony. In the genus *Aranea*, where the female is much the larger, the male usually ends his days in the maw of his spouse.

FAMILY. PISAURIDAE.

Pisaura rufofasciata, *De Geer* (= *P. mirabilis*, *Clk.*). Apparently as common in the Island as on the mainland. This interesting species constructs a protective cage of silk several inches in diameter around its cocoon, and spends most of its time upon this cage ready to protect its eggs and young should occasion require.

FAMILY. LYCOSIDAE.

This family includes the species popularly known as "Wolf-spiders," which may be recognised, roughly speaking, by the arrangement of the eyes, of which four large ones form a quadrilateral figure on the upper part of the head, and four much smaller ones are arranged in a transverse row lower down on the face. They spin no snare, but hunt their prey in the open.

Pirata palustris, *Fabr.* (= *P. piratica*, *Clk.*). This common species is aptly named "The Pirate," as it frequently runs upon the surface of the water, either to escape danger or in pursuit of prey. Adults occurred at Heytesbury Farm in May.

Trochosa leopardus, *Sund.* Females with egg-sacs abundant in July, Rookley Wilderness.

T. picta, *Hahn.* Recorded by Mr. Hull.

T. robusta, *Sim.* Recorded by Mr. Hull.

T. ruricola, *De Geer.* Heytesbury Farm, August.

T. terricola, *Thor.* Parkhurst Forest, September.

Tarentula accentuata, *Latr.* Pan Down gravel pit.

T. carinata, *Oliv.* (= *T. pulverulenta*, *Clk.*). Pan Down, in September. Females only.

Lycosa agrestis, *Westr.* A very rare species of which only two or three other specimens have been obtained in Britain. A single female occurred at Pan Down on 8th September, 1907.

L. monticola, *Sund.* Adult females on Pan Down in September.

L. palustris, *Linn.* Recorded by Mr. Hull.

L. prativaga, *L. Koch.* Pan Down. Adult females in September.

L. saccata, *Linn.* Common in many parts of the Island. Adults in May.

L. annulata, *Thor.* Very common in potato field at Newport.

L. lugubris, *Walck.* Adult females with egg-sacs in August. Combley Wood.

L. nigriceps, *Thor.* Pan Down and Parkhurst Forest. Adult females in September.

L. fumigata, *Linn.* (= *L. paludicola*, *Clk.*). Captured by Mr. Hull and recorded by the Rev. O. Pickard-Cambridge. An exceedingly rare species.

FAMILY. PACHYGNATHIDAE.

Pachygnatha degeerii, *Sund.* Extremely common in moist places amongst grass, &c. Adults can be found at all times of the year.

FAMILY. TETRAGNATHIDAE.

Tetragnatha extensa, *Linn.* Specimens are recorded under this name as occurring in the Island in the "Victoria History." It is a fairly common species.

T. solandrii, *Scop.* An adult male was taken amongst plants near a pond, Heytesbury Farm, in May. This is a common species usually found near to water.

T. obtusa, *C. L. Koch.* Rookley Wilderness. A single female in August.

FAMILY. ARGIOPIDAE.

Meta reticulata, *Linn.* (= *M. segmentata*, *Clk.*). Common everywhere. The individuals of the spring brood are generally far smaller than those of the autumn brood, having, in fact, been erroneously described as a separate species.

Zygiella litterata, *Oliv.* (= *Zilla x-notata*, *auct.*). Common in the Island, generally on or near houses. Adults taken from August to December.

Aranea diadema, *Linn.* (= *Epeira diademata*, *auct.*). Abundant everywhere. Adult in autumn.

A. reaumuri, *Scop.* (= *A. quadrata*, *Clk.*). Newport.

A. foliata, *Fourc.* (= *Epeira cornuta*, *auct.*). Rookley Wilderness. This spider is usually found by the side of streams and in marshy places.

A. sex-punctata, *Linn.* (= *Epeira umbratica*, *auct.*). Pan Down. An adult male in September.

A. cucurbitina, *Linn.* This beautiful and common species is plentiful in Parkhurst Forest, Rookley Wilderness, and other localities on oak trees.

A. gibbosa, *Walck.* Recorded in "Victoria History."

A. trigguttata, *Fabr.* Recorded by Mr. Hull.

FAMILY. PHOLCIDAE.

Pholcus phalangioides, *Fuess.* Very plentiful in barns and outbuildings, and even in inhabited rooms. This species is probably an importation, although a very long-established one.

FAMILY. MIMETIDAE.

Ero thoracica, *Wid.* Recorded in "Victoria History."

FAMILY. THERIDIIDAE.

Steatoda denticulata, *Walck.* (= *Theridion denticulatum*, *auct.*). Recorded by Mr. Hull.

S. varians, *Hahn* (= *Theridion varians*, *auct.*). Recorded in "Victoria History."

S. similis, *C. L. Koch* (= *Theridion simile*, *auct.*). Recorded by Mr. Hull.

S. pallens, *Bl.* (= *Theridion pallens*, *auct.*). Recorded by Mr. Hull.

S. vittata, *C. L. Koch* (= *Theridion pulchellum*, *auct.*). Recorded by Mr. Hull.

S. lunata, *Oliv.* (= *Theridion formosum*, *auct.*). In garden, Newport—an immature specimen.

Theridium redimitum, *Linn.* (= *Phyllonethis lineatus*, *Clk-Cambr.*). A lovely little spider and common everywhere during the autumn. The female may be found enclosed with her bluish-white globular egg-sac in a rolled leaf. Three well-marked varieties occur in which the abdomen may be marked with either a central or two lateral crimson stripes, or may be entirely devoid of red markings.

Episinus truncatus, *Latr.* Recorded by Mr. Hull.

Neottiura bimaculata, *Linn.* Newport, amongst plants in garden. This delicate little spider is rather local, usually occurring upon heaths. The female carries her egg-sac about with her, unlike most of her allies.

Stearodea bipunctata, *Linn.* (= *Steatoda bipunctata*, *auct.*). Common in the angles of barns and outbuildings, in the crevices of badly-fitting window frames, and many similar localities. Both sexes taken adult in September.

Pholcomma gibbum, *Westr.* A male of this curious little spider was taken at Marvel Copse in September.

Asagena phalerata, *Panz.* A striking and very rare species. Taken by Mr. Hull.

Robertus lividus, *Bl.* (= *Pedanostethus lividus*, *auct.*). Marvel Copse, April.

FAMILY. LINYPHIIDAE.

Stemonyphantes lineatus, *Linn.* Common amongst grass, low herbage, and debris. Adult females in December.

Labulla thoracica, *Wid.* Both sexes in the adult condition were taken in a summer-house at Newport in September.

Linyphia peltata, *Wid.* Marvel Copse. Adults in May.

L. hortensis, *Sund.* Carisbrooke Castle. Adults in April.

L. montana, *Linn.* (= *L. triangularis*, *Clk.*). Parkhurst Forest. Adult in September.

L. clathrata, *Sund.* Marvel Copse. Adult in July.

Lepthyphantes nebulosus, *Sund.* Newport. In outbuildings, &c. Adults in September and December.

L. leprosus, *Ohlert.* In a conservatory, Newport, in December.

L. pallidus, *Camb.* An adult male at Marvel Copse, in November.

L. blackwallii, *Kulcz.* Marvel Copse and Parkhurst Forest. Both sexes adult in September.

L. tenuis, *Bl.* In a garden, Newport. A very common species in most localities.

L. ericaeus, *Bl.* An adult female in a conservatory at Newport in December.

Bathyphantes gracilis, *Bl.* Adults at Marvel Copse in September.

B. concolor, *Wid.* Adult females at Shanklin in August.

Micryphantes rurestris, *C. L. Koch.* Common in several localities in the Island. Adults in August and September.

Sintula diluta, *Camb.* Males at Marvel Copse in September.

Porrhomma egeria, *Sim.* A very rare species, recorded by Mr. Hull.

Macrargus rufus, *Wid.* An adult male at Marvel Copse in March.

Oedothorax fuscus, *Bl.* Marvel Copse. Adult males in September.

Stylothorax apicatus, *Bl.* Pan Down. Adult males in September.

Trachygnatha dentata, *Wid.* Recorded in "Victoria History."

Erigonidium graminicolum, *Sund.* Recorded in "Victoria History."

Erigone dentipalpis, *Wid.* Adults in a garden, Newport, in September.

E. atra, *Bl.* Adults in July, Luccombe.

Gonatium rubens, *Bl.* Adult females common at Marvel in October.

G. rubellum, *Bl.* Adult males at Marvel in September.

Enidia bituberculata, *Wid.* Adult males at margin of pond, Heytesbury Farm, in April.

Dicymbium nigrum, *Bl.* Adult males at margin of pond, Heytesbury Farm, in April.

Diplocephalus cristatus, *Bl.* Females in a garden, Newport, in September.

Araeoncus humilis, *Bl.* Males at Newport in September.

Ceratinodes scabrosa, *Camb.* Marvel sand-pit. Adult males in June.

Maso sundevallii, *Westr.* Females at Marvel Copse in September.
Jacksonia acuminata, *Bl.* Females in a garden, Newport, in December.

ORDER. PHALANGIDEA.

Liobunum rotundum, *Latr.* Abundant in several localities in the Island in autumn.

Phalangium opilio, *Linn.* In a garden, Newport, in September. A very common species.

Platybunus triangularis, *Herbst.* Garden, Newport, in winter.

Megabunus insignis, *Meade.* Marvel Copse. Adults in September.

Oligolophus morio, *Fabr.* Common in several localities.

O. agrestis, *Meade.* Common, in company with the preceding species.

Nemastoma lugubre, *O. F. Muller.* In garden, Newport.

N. chrysomelas, *Herm.* In a garden at Newport.

Anelasmacephalus cambridgii, *Westw.* This rare and very curious species is recorded in the "Victoria History."

ORDER. CHERNETIDEA.

Chelifer nodosus, *Schrank.* Newport.

Ideobisium cambridgii, *L. Koch.* Several specimens of this very rare species have been taken near Newport and at Marvel Copse.

Obisium muscorum, *Leach.* A common and widely distributed species. Found amongst garden refuse at Newport.

Chthonius rayi, *L. Koch.* Under boards in garden, Newport.

ORDER. TARDIGRADA (WATER-BEARS).

Macrobiotus hufelandii. Has been noticed by Mr. Pring in the sediment of water from various ponds about Newport and elsewhere.

CRUSTACEA.

BY THE EDITOR.

THIS great class is well represented in and about the Isle of Wight, though, unfortunately, little seems to have been done in the way of systematic study of any of the numerous groups which comprise the class.

Crustaceans, including as they do such familiar creatures as crabs, shrimps, and woodlice, and a host of microscopic forms, may be found in great numbers off our coast, between tides upon our shores, in our streams, ponds, and ditches, and in vast multitudes as individuals—though few in species—upon the dry land itself.

The four sub-classes and some of the minor divisions into which the various species belonging to the Crustacea have been grouped, will be referred to in their proper order, though only in a few cases can an attempt be made to give anything approaching a complete list of the local species.

SUB-CLASS I. EPIZOA OR HAUSTELLATA.

A division which comprises a considerable number of species which are external parasites upon fishes and other marine animals. I have no local records for this group.

SUB-CLASS II. CIRRIPEDIA OR THYROSTRACA.

Lepas anatifera (Ship-barnacle). When timber which has been floating in the sea for some time gets cast ashore it is frequently

covered by these familiar crustaceans, about which such weird stories were told by the early "naturalists." Mr. Poole, of Shanklin, has in his collection a small group of barnacles which had affixed themselves to a floating wine-bottle cork.

There are other species in this genus which may at any time be thrown up on our shores on drifted wood, &c.

Balanus balanoides (Common Acorn-barnacle). Very abundant between tides on rocks and timber structures, also on the shells of molluscs, the backs of crabs, &c.

There are several other species in this and allied genera which may be expected to occur in the Island.

SUB-CLASS III. ENTOMOSTRACA.

This group, comprising as it does a host of minute species inhabiting our ponds and ditches, and also the sea, appears to have been but little studied in the Island. Such few records as have come to my notice are given below.

ORDER 1. OSTRACODA.

Herpetocypris reptans. Appears to be frequent in the large ponds at Carisbrooke, and in Westminster Pond, Newport.

Cypris virens. Westminster Pond (S. W. Pring).

C. vidua. Westminster Pond (S. W. Pring).

ORDER 2. COPEPODA.

Centropages hamatus. Taken by Mr. Garstang, in June, off Spithead (Vic. Hist.).

Temora longicornis. Off Spithead in June, W. Garstang (Vic. Hist.).

Acartia clausi. Off Spithead in June, common, W. Garstang (Vic. Hist.).

Cyclops strenuus. In pond, Heytesbury Farm, near Newport (S. W. Pring).

ORDER 3. CLADOCERA.

Daphnia obtusa. Taken in a pond at Totland Bay by Mr. D. J. Scourfield (Vic. Hist.).

D. pulex. Westminster Pond, and other ponds near Newport (S. W. Pring).

Simocephalus vetulus, var. exspinosus. In pond, Heytesbury Farm (S. W. Pring).

Moina rectirostris. Taken in the Island by Mr. Scourfield (Vic. Hist.).

Chydorus sphericus. In pond, Heytesbury Farm, near Newport, also in Westminster Pond (S. W. Pring).

ORDER 4. PHYLLOPODA.

Nebalia bipes. St. Helens, under stones in muddy sand, W. Garstang (Vic. Hist.).

SUB-CLASS IV. MALACOSTRACA.

DIVISION 1.

EDRIOPHTHALMATA (SESSILE-EYED CRUSTACEANS).

Of the order Isopoda (equal-footed) a fair number of species have been collected. Included in this group are the terrestrial Isopods, commonly known as woodlice, and of these twenty-five species have been ascertained to occur in the British Isles. Ten at least are found in the Island, and in all probability several more will be discovered by further search.

Ligia oceanica (Quay-louse). Common on the seashore beneath stones and seaweed, in the crevices of rocks, &c.; also on the banks of the Medina Estuary below Newport.

Trichoniscus pusillus. Amongst moss, Parkhurst Forest, in January; also in Marvel Copse. Probably common.

Oniscus asellus (Common Slater). An abundant species in gardens, beneath stones, under bark, &c.

Philoscia muscorum (Moss Slater). Common and generally distributed; very active in its movements; may be found beneath stones, amongst moss, and at the roots of grass and herbage.

Platyarthrus Hoffmannseggii. I have found this curious species on several occasions in its customary habitat—the nests of ants, usually beneath stones, at Totland Bay, St. George's Down, and Arreton; Mr. Stebbing records it from Ventnor, and Mr. Woods from Bembridge Down. These little creatures are white, and have no eyes.

Porcellio scaber. Abundant in gardens and elsewhere beneath stones, amongst vegetable refuse, and under the bark of fallen trees.

P. pictus (?) One specimen in outhouse, Newport. Dr. Calman, of the British Museum, who has kindly identified the species of woodlice given in this list, believes the specimen submitted to him (an immature one) to be of this species.

P. dilatatus. Mr. Stebbing, in the "Vic. Hist.," records this species, which he terms "rather uncommon," from Ventnor.

Metoponorthus pruinusos. Beneath heap of garden refuse, in September, Newport.

Armadillidium vulgare (Common Armadillo). Very frequent beneath stones and at the roots of plants in the open country, on the chalk downs, and near the sea.

Asellus aquaticus (Water Woodlouse). Common in ponds near Newport, and doubtless elsewhere.

Sphaeroma serratum. On muddy shore between tides at Gurnard; on rocks at Steephill. Whitecliff Bay (G. T. Woods). This little creature when alarmed rolls itself into a ball.

S. rugicauda. King's Quay (G. T. Woods).

Idotea balthica. Occurs in the sea, and on sandy shores. Ryde (C. Morley).

ORDER. AMPHIPODA.

The large number of species comprised in this order are characterized by having legs adapted both for swimming and for walking. The majority are of small size, varying from a quarter of an inch to an inch in length. Some are marine; others are almost terrestrial; whilst many live in wells, or in streams and rivulets. The sand-hopper of our seashores is a familiar example. But few species seem as yet to have been recorded from the Island.

Talitrus locusta (Sand-hopper). Plentiful on our shores at about the upper limit of the tide; usually taking shelter beneath heaps of decaying seaweed on which the species feeds. Though abounding in the summer time they are not always to be found in winter.

Orchestia littorea (Shore-hopper). St. Helens, and doubtless elsewhere (G. T. Woods).

Niphargus aquilex. Occurs in wells. Mr. Stebbing, in the "Vic. Hist.," refers to having received specimens from the Island.

Amathilla homari (*Grayia homari*). This species is referred to in "British Sessile-eyed Crustacea," under the name of *Amathilla sabini*, as having been found in the Isle of Wight.

Gammarus marinus. Whitecliff Bay, in March (G. T. Woods).

G. pulex. The common freshwater "shrimp." May usually be found in numbers in our shallow streams and rivulets.

Corophium longicorne. According to Mr. Garstang this species occurs off the Island and burrows in mud (Vic. Hist.).

DIVISION II.

PODOPHTHALMATA (STALK-EYED CRUSTACEANS).

ORDER 1. STOMATOPODA OR STOMAPODA.

Squilla Desmarestii. The late A. G. More informed Bell that this species had been taken repeatedly off Bembridge by fishermen on a muddy bottom grown over with *Zostera*. Stebbing speaks of

this shrimp as being one of the rarest of Crustaceans, but J. Sinel, in his admirable little book, "An Outline of the Natural History of our Shores," states that he believes the species to be less rare than is supposed, and that it is due to its habit of burrowing at the roots of *Zostera* that it is so seldom seen. On one occasion during a storm squillas were washed ashore on the coast of Jersey by thousands; and Mr. Woods, of Sandown, tells me that in 1904, during a storm, a good many were washed up on the beach near Yaverland in Sandown Bay. These latter were mixed up with seaweed and were mostly alive. Specimens are not infrequently taken between Ryde and St. Helens.

ORDER 2. DECAPODA.

TRIBE I.—MACROURA (BIG-TAILS).

Palaemon (Leander) serratus (Common Prawn). Very plentiful in Island waters. Bell speaks of the London market in his time (about 50 years ago) being mainly supplied by prawns caught off the Hampshire and I. of W. coasts, and this trade still continues.

P. (Palaemonetes) varians. Mr. Garstang records this species from a brackish ditch between Sea View and Ryde.

Hippolyte (Virbius) varians. Mr. Garstang, in the "Vic. Hist.," refers to this species as occurring in the district; it is noted for its chameleon-like changes in colour.

Athanas nitescens. In crevices under clay boulders, or on *Zostera* beds, St. Helens (Vic. Hist.); Cowes (C. Morley).

Crangon vulgaris (Common Shrimp). Very plentiful, especially in sandy places.

C. sculptus (Sculptured Shrimp). Occurs off the Island where there is sand, according to W. Garstang (Vic. Hist.).

Homarus vulgaris (Common Lobster). Common off most parts of the Island, but far less plentiful than the edible crabs. The number of lobster-pots to be seen by the fishing huts indicates that a considerable local trade is done with these delicacies.

Palinurus (vulgaris) quadricornis (Craw-fish). This, the common spiny lobster of Bell, appears to be a rare species in the Island. Specimens are very occasionally taken by fishermen in Sandown Bay (G. T. Woods).

TRIBE 2.—ANOMOURA (QUEER-TAILS).

Galathea strigosa (Spinous Galathea). Occasionally in Sandown Bay (G. T. Woods); one only in prawn-pot at Shanklin (H. F. Poole).

G. squamifera (Scaly Galathea). Frequently brought ashore at Sandown in lobster-pots (G. T. Woods); occasionally washed up dead at Shanklin, and is found commonly in the prawn-pots (H. F. Poole); occurs also on other shores.

Porcellana longicornis (Minute Porcelain Crab). Sometimes washed up in considerable numbers at Shanklin, but not always so common (H. F. Poole); Cowes (C. Morley).

P. platycheles (Hairy Porcelain Crab). Frequently to be found alive at low water at Horseledge, Shanklin; also at the base of the Culvers (H. F. Poole); Cowes (C. Morley).

Pagurus (Eupagurus) Bernhardus (Common Hermit). Brought ashore in great numbers by fishermen in lobster-pots. It is very probable that some of the smaller and rarer species of "hermits" may be found if search is made for them. This species begins to breed when of very small size, so that it must not be supposed if a small specimen be found with eggs that it necessarily belongs to one of the scarcer species.

TRIBE 3.—BRACHYURA (LITTLE-TAILS).

Corystes Cassivelaunus (Masked Crab). Frequently thrown up on to the shore at Shanklin during storms from the East (H. F. Poole).

Polybius Henslowii (Henslow's Swimming-crab). Mr. Couch speaks of this species as being more of a swimming crab than either of the other kinds. Occasionally washed up on to the beach at Shanklin, and fairly common in the prawn-pots (H. F. Poole); Sandown Bay, not common (G. T. Woods).

Portunus depurator (Cleanser Swimming-crab). Mentioned by W. Garstang in the "Vic. Hist." as occurring off the Island where there is mud; very common in lobster-pots in Sandown Bay (G. T. Woods); common in prawn-pots at Shanklin (H. F. Poole).

P. arcuatus (Arched-fronted Swimming-crab). One specimen in Sandown Bay (G. T. Woods); brought ashore commonly in prawn-pots at Shanklin, and also found at low water amongst the rocks at the base of the Culvers (H. F. Poole).

P. puber (Velvet Swimming-crab). Frequent in lobster-pots, Sandown Bay (G. T. Woods); Ryde (G. W. Colenutt); commonly washed up after storms at Shanklin (H. F. Poole).

Portumnus variegatus. Occurs commonly at Shanklin at low water on, or rather in, the sand which, owing to its colouration and spotted carapace, it closely resembles. Notwithstanding this protective device it sometimes falls a prey to the gulls, in common with other crustaceans and sea creatures, as they are in the habit of following the retreating waves and snapping up every edible thing they come across (H. F. Poole).*

* Mr. Poole writes me on reading the proof of this article: "This habit is more particularly a winter proceeding with the gulls, and the crabs they snap up, or spoil, before the collector can get them are mostly dead specimens. I should think the wonderful protective colouration of *P. variegatus* when alive would deceive even a gull. When they are dead and rolled over by the waves showing the whitish under-surface it would be a different matter."

Carcinus maenas (Common Shore Crab). Plentiful on all our shores wherever there are rocks and seaweed to afford it shelter.

Pirimela denticulata. Bell states, in "British Stalk-eyed Crustacea," that W. Thompson found three specimens washed ashore at Compton; and W. Garstang, in the "Vic. Hist.," mentions the occurrence of this species off the Island in shell-sand.

Pilumnus hirtellus (Bristly Crab). Frequent at Shanklin, alive at low water, and dead specimens are often washed up (H. F. Poole); Sandown (G. T. Woods). Bell says this species frequents the coasts of Hampshire and the adjoining counties, and occurs in deep water as well as in shallow.

Cancer pagurus (Edible Crab). Very common, especially off the south side of the Island. Large numbers are taken annually by the fishermen, and many are sent to the London market. So well-established is the trade in crabs at Niton that the village has for many years been known locally as Crab-Niton. This, doubtless, is to distinguish it from Knighton, at Newchurch, which is called K-nighton.

Maia squinado (Spinous Spider-crab). Occurs not infrequently off Sandown and Shanklin in deep water, and is sometimes brought ashore in crab-pots (H. F. Poole). This species attains to a great size.

Hyas araneus. Plentiful in lobster-pots, Sandown Bay; fishermen say they are commoner since dredgers from Portsmouth have tipped mud just outside the Bay (G. T. Woods); Cowes (C. Morley); common in prawn-pots, Shanklin (H. F. Poole).

H. coarctatus. Two specimens from Sandown Bay (G. T. Woods); common in prawn-pots, Shanklin (H. F. Poole).

Pisa (Blastus) tetraodon (Four-horned Spider-crab). I. of W. (Dr. Leach & Rev. T. Stebbing); very common at Ryde (C. Morley); fairly common in lobster-pots at Shanklin, and occasionally found alive at low water (H. F. Poole); Sandown Bay (G. T. Woods).

Inachus dorynchus. Washed up in some numbers at Shanklin during rough weather in the winter of 1895, and fairly common since in the prawn-pots (H. F. Poole).

I. Dorsetensis (Scorpion Spider-crab). In lobster-pots, Sandown (G. T. Woods); several specimens in lobster-pots at Ventnor.

Stenorynchus phalangium = *Macropodia rostrata*. One specimen in lobster-pot, Sandown (G. T. Woods); common at Ryde (C. Morley); one taken in prawn-pot off Shanklin (H. F. Poole).

The foregoing list enumerates but 67 species, which can scarcely be regarded as representative of the Crustacea of the Island, excepting as regards the crabs and the woodlice. I trust, however, that it will form a useful nucleus of a more extended list to be published at some future date.

As examples of what may be done in faunal work may be mentioned the "Crustacea of Devon and Cornwall," by Canon Norman & Dr. Scott, 1906, in which an enumeration is made of 808 species which have been found in these two counties; and that of the Clyde District, from which Dr. Scott records 855 species.

The following are a few works dealing partly or wholly with British Crustacea: "British Stalk-eyed Crustacea," Bell, 1853; "British Sessile-eyed Crustacea," Bate & Westwood, 1861-69; "A History of Crustacea (Malacostraca)," Stebbing, 1893; "British Entomostraca," Baird, 1850; "Monograph of Copepoda," Brady, 1878-1880; "British Recent Ostracoda," Brady, in "Trans. Linn. Soc.," 1868; "Crustacea of Norway," Sars; "British Woodlice," Webb & Sillem, 1906; "An Outline of the Nat. Hist. of our Shores" (chapter on Crustacea), Sinel, 1906.

MYRIAPODA.

BY THE EDITOR.

THIS class contains the Millipedes and Centipedes of which there are 50 or 60 species which inhabit Great Britain. They are allied to the spiders, and to the insects, and in certain respects to some of the worms. Centipedes devour living animals, such as insects and worms, whereas Millipedes are vegetable feeders. Millipedes may be distinguished from Centipedes by the fact that they possess two pairs of legs to each segment of the body, whilst the latter have but one pair to each segment.

These familiar and many-legged little animals may be found in various situations. I have noticed them, of one species or another, amongst garden refuse, turned up with the soil when digging, in moss and amongst dead leaves, beneath the bark of trees, in decayed wood, under logs and stones, in hedge-banks, beneath seaweed on the seashore, in old decayed potatoes, and in many other places; and I am told of a species that may be shaken from ivy blossoms, and of another that lives in pine trees.

I know of no hand-book of the British species, but a monograph is being prepared for the Ray Society by Mr. Wilfred Mark Webb, who at the present time is accumulating material for this purpose. I may say in this connection that I collected a number of specimens, of about a dozen species, and forwarded them to Mr. Webb—partly as a contribution towards the Ray Society publication, and partly with a view to increasing our knowledge as to the local species for the present work. Mr. Webb undertook to send me the names of these as soon as he could get them worked out, but he writes me that he has been so much engaged in a fresh undertaking that he has had to put aside his Centipede work for the present; so that, as the printers are now ready for this section of the "Guide," I can only give here the names of the several species which were collected in the Island by Mr. Oldfield Thomas, and recorded by Mr. R. I. Pocock in his article on the Myriapoda in the "Victoria History (Hants)."

CENTIPEDES.

- Lithobius forficatus**, *Linné*. Common in gardens, &c.
L. variegatus, *Leach*. Osborne.
L. melanops, *Newport*. Freshwater.
Cryptops hortensis, *Leach*. Freshwater.
Geophilus longicornis, *Leach*. Freshwater.
Linotaenia crassipes, *C. Koch*. Freshwater.

MILLIPEDES.

- Glomeris marginata**, *Villers*. Yarmouth.
Atractosoma polydesmoides, *Leach*. Osborne.
Julus britannicus, *Verhoeff*. Osborne.
J. punctatus, *Leach*. Shanklin.
J. niger, *Leach*. Osborne and St. Lawrence.

Note.—If I receive the necessary information as to my own captures from Mr. Webb before the last pages of this work are in the press, I propose adding at the end of the book a supplementary list.

INSECTS (INTRODUCTORY).

BY THE EDITOR.

The term "Insect" conveys different impressions to the minds of different persons, according to whether they have ever given serious attention to the host of small animals which are now grouped together in the class Insecta. The non-entomological public have, as a rule, a somewhat vague idea as to the limits of this class, and, not unnaturally, associate with the true Insects such small fry as spiders, mites, woodlice, centipedes, and the like. I have known even of slugs being spoken of as "Insects," and we have all heard of "Coral Insects." On the other hand there is a popular tendency to exclude butterflies and moths, and to look upon them as a separate class, though all naturalists regard them as true Insects.

Entomologists are not agreed as to how many orders should be constituted to contain the vast army of Insects which exist in the World: the number adopted by Dr. David Sharp, in the "Cambridge Natural History," is nine, and these are as follows:—

APTERA.—An obscure order of wingless Insects resembling larvae, and undergoing but little metamorphosis; they are of simple organization, of small size, and few in species, but often numerous as individuals; the silvery-looking little creature found in buildings and known as the "fish-insect" is an example; other very common species found about rocks, &c., have a spring which enables them to jump. No list of species can be given of this order.

ORTHOPTERA.—Contains the grasshoppers, crickets, locusts, earwigs, cockroaches, mantises, walking-leaf and stick Insects.

NEUROPTERA.—Dragon-flies, may-flies, caddis-flies, lacewinged-flies, scorpion-flies, termites, ant-lions, &c.

HYMENOPTERA.—Bees, wasps, ants, ichneumon-flies, saw-flies, gall-flies, &c.

COLEOPTERA.—Beetles. (Cockroaches are often spoken of as "black beetles," though they are neither "black" nor "beetles.")

LEPIDOPTERA.—Butterflies and moths.

DIPTERA.—Two-winged flies—such as blow-flies, house-flies, crane-flies, and gnats; also a few wingless forms such as fleas.

THYSANOPTERA.—A very small order consisting of a few species of *Thrips*—tiny insects which may often be found in profusion in flowers. No list of species can be given of these.

HEMIPTERA.—Bugs, aphis-flies, cicadas, lantern-flies, &c.: an extensive order of Insects very varied in character, often beautiful in colour and quaint in design, and living for the most part on the juices of various plants.

As to the number of species of Insects now living on our planet, they can truthfully be termed a mighty host. About 250,000 different kinds have been collected, described, and named, but some entomologists believe that even this large number may only represent about one-tenth of the species that may eventually be discovered. Other estimates are on a somewhat more moderate scale, and vary from 800,000 to 2,000,000. In Britain alone some 14,000 or 15,000 species are known,* and these are constantly being added to, so that if we assume, by way of comparison, that the World's Insects run to about 1,500,000 it would seem that we in Britain possess about one in a hundred of the grand total.

If these figures are approximately correct, it shows that Insects are more local in their distribution than many other organisms, especially such groups as the Infusoria, Rotifera, and the spore-bearing plants; also than the higher forms, as mammals, birds, and fishes.

In the following pages lists of the species belonging to the seven principal orders which have been observed or collected in the Island will be given, with data, when available, as to their comparative frequency and distribution.

* The present total certified from Britain is about:—

Coleoptera	...	...	...	3264
Hemiptera	...	...	...	1233
Orthoptera	...	...	...	53
Neuroptera	...	...	...	443
Lepidoptera	...	...	...	2100
Hymenoptera	...	...	...	4830
Diptera	...	...	...	2577
Total	...	...	...	14,500

Claude Morley.

ORTHOPTERA.

BY MALCOLM BURR, B.A., F.E.S., F.L.S., F.Z.S., F.G.S.

THE Isle of Wight offers a very favoured collecting-ground to the Orthopterist: a good proportion of our rarer forms occur in the Island, and the fact that two or three scarce species which almost certainly occur have not yet been recorded, is an incentive to further search.

The system followed in this list is that of Brunner, with the modifications proposed by Bolivar and the inevitable modernisation of the nomenclature.

Our British Orthoptera offer no difficulty to the student, for all the species are easily recognisable. They may be determined by the help of my own little book (British Orthoptera, Huddersfield, 1897), and hints may be found in numerous notes scattered through the pages of the "Entomologists' Record" for the past ten years. We have been promised a complete and well-illustrated work on the subject from the capable pen of Mr. W. J. Lucas: let us hope that it will soon appear.

The material for the following list has been afforded by various records in the entomological magazines, by captures and notes furnished me by various friends and correspondents, and by captures made by myself in the Island in 1903, recorded in the "Ent. Record," Vol. XV., p. 294 (1903).

The following are the initials of the various authorities for captures and localities:—

- | | |
|-----------|---|
| F.M : | Mr. Frank Morey (specimens sent to me for identification). |
| C.M : | Mr. Claude Morley (1907). |
| H.F.P : | Mr. H. F. Poole, of Shanklin. |
| H.S.K.D : | Mr. H. S. K. Donisthorpe, who has taken a number of specimens in the Island on various occasions. |
| M.B : | The writer (1903). |

ORDER. ORTHOPTERA.

SUB-ORDER I. DERMAPTERA (EARWIGS).

Labidura riparia, *Pall.* (Great Earwig). Has been taken at Bonchurch.

Labia minor, *Linn.* (Lesser Earwig). Newport, in a cucumber frame, in May (F.M.); also beneath heaps of garden refuse in Sept. (F.M.). Probably common throughout the Island. It may be taken on the wing with Staphylinidae in warm summer evenings.

Forficula auricularia, *Linn.* (Common Earwig). Abundant everywhere. A male with one branch of forceps abortive from Ryde (H.S.K.D., 1903); two females with wings abortive, perhaps referable to the South-European *F. decipiens*, in horse-dung at Compton Bay (M.B., 1903). This is an exceedingly interesting capture, as apterous specimens of the common earwig are practically unknown. It is highly desirable that the question be cleared up by the capture of a male: any earwig with abortive wings should be promptly submitted to a competent specialist for examination.

F. lesnei, *Finot* (Lesne's Earwig). Fairly common. Numerous at Freshwater Bay, Blackgang, and the Undercliff (M.B.); also at Niton and St. Catherine's Point (H.S.K.D.). May be taken by sweeping among flowering shrubs and nettles in the afternoon and evening in the late summer.

SUB-ORDER II. DICTYOPTERA.

SECTION I. BLATTODEA (COCKROACHES).

Ectobia lapponica, *Linn.* Parkhurst Forest (H.S.K.D., 1903); also by F.M. in August, 1907. Probably elsewhere: may be taken by sweeping in grass, and under rubbish and dead leaves.

E. panzeri, *Steph.* Common among dry grass along the coast: Yarmouth, Alum Bay, Totland Bay, Compton Bay, Blackgang, St. Catherine's Point (M.B.); Parkhurst Forest (C.M.). There is a female with ootheca from Blackgang in the Hope Museum, Oxford.

E. livida, *Fabr.* Very likely occurs. It should be looked for in Parkhurst Forest.

Phyllodromia germanica, *Linn.* Shanklin: one specimen in a house and another in a grocery store (H.F.P.). Probably established in restaurants, &c., in other parts of the Island.

Blatta orientalis, *Linn.* (Common Cockroach). Plentiful at Newport and elsewhere (F.M.).

SUB-ORDER III. EUORTHOPTERA.

SECTION I. ACRIDIODEA (TRUE GRASSHOPPERS).

Stenobothrus lineatus, *Panzer.* No record found: a local species that probably occurs in the Island.

Omocestus viridulus, *Linn.* Parkhurst Forest (M.B.); Haven Street woods (C.M.); Newport (F.M.). A common species.

O. rufipes, *Zett.* No record found, but probably occurs in the Island.

Stauroderus bicolor, *Charp.* Our commonest British grasshopper.

Chorthippus elegans, *Charp.* A local species. Freshwater; Freshwater Bay, in dry grass near the front; Parkhurst Forest (M.B.); Ventnor (C.M.).

C. parallelus, *Zett.* A very common grasshopper.

Gomphocerus maculatus, *Thunb.* Afton Down, Undercliff, Blackgang, St. Catherine's Point (M.B.).

G. rufus, *Linn.* Should be sought for on grassy hillsides.

Tettix bipunctatus, *Linn.* Parkhurst Forest (C.M., M.B.); Marvel, in May (F.M.); Undercliff (M.B.). Probably everywhere.

T. subulatus, *Linn.* Should also be looked for.

These two species may be taken by sweeping—the former on dry ground, the latter in humid situations.

SECTION II. LOCUSTODEA (LONG-HORNED GRASSHOPPERS).

Letophyes punctatissima, *Bosc.* Common: Freshwater, Freshwater Bay, Compton Bay, Blackgang, and Undercliff (M.B.); Parkhurst Forest (C.M., F.M.); Yarmouth (C.M.).

Meconema varium, *Fabr.* Found commonly when beating for larvae, in August and September, at Bordwood, near Sandown; also on street lamps in Shanklin (H.F.P.). In house at Newport in August, also in Marvel Copse (F.M.). In October and late into November they may often be found straggling into houses through the windows: they seem commonest after high wind, which blows them down from their trees. They occur chiefly on limes and oaks.

Xiphidium dorsale, *Latr.* Numerous in the marsh extending from Yarmouth to Freshwater (M.B.); Rookley Wilderness (C.M.).

Locusta viridissima, *Linn.* Abundant in the Island. On August evenings its harsh stridulation resounds from hedges and thickets—more rarely in trees; in Parkhurst Forest (M.B.).

Platycleis grisea, *Fabr.* Numerous at Compton Bay, Blackgang, and the Undercliff (M.B.).

Pl. brachyptera, *Linn.* Should be looked for on heath land, and the rare *Pl. roeselii*, *Hagenb.* on grassy fields.

Olythoscelis griseo-aptera, *De Geer* (= *Thamnotrizon cinereus*, *Linn.*). Abundant: its characteristic chirp may be heard* on summer and autumn evenings, as late as the end of October, in hedges and thickets: abundant at Freshwater, Compton Farm, Blackgang, Undercliff (M.B.); Sandown (W. Holland); and probably everywhere.

SECTION III. GRYLLODEA (CRICKETS).

Nemobius sylvestris, *Fabr.* (Wood Cricket). This species has occurred commonly for the last ten years or more at Bordwood, near

* "So chirps the grasshopper one good-night carol more;
He is an evening reveller, who makes
His life an infancy, and sings his fill."—Childe Harold.

Sandown; and has also been noticed in Parkhurst Forest (H.F.P.); swept in Parkhurst Forest, August, 1907; also on previous occasions (F.M.). These are the first authentic records of the Wood Cricket from any British locality outside the New Forest.

Gryllus domesticus, *Linn.* (House Cricket). Frequent in bake-houses, but less common than formerly, owing to the improved ovens which have been introduced (H.F.P.); occasionally in houses at Newport, and probably throughout the Island (F.M.).

G. campestris, *Linn.* (Field Cricket). Should be looked for in May.

Gryllotalpa gryllotalpa, *Linn.* (Mole Cricket). Dr. Welsford has informed me that the Mole Cricket occurs in the Island; and Mr. Morey writes me that he has seen specimens which were dug up in a garden at Newport many years ago. Mr. P. Wadham, of Newport, found nine of these insects about six years since when turning over a heap of damp sandy soil in his garden through which flows the stream known as the Lukely. He has also dug out specimens on the banks of the Medina at Shide. This is, perhaps, our most striking British insect, and well worth special search. It is far from common, being very locally distributed.

NEUROPTERA

(LINNAEAN SENSE.)

BY W. J. LUCAS, B.A., F.E.S.

WHEN Linnaeus placed together the very heterogeneous groups of insects that comprise his natural order Neuroptera, he little thought of the heritage of difficulties he was bequeathing to succeeding entomologists. That they do not form a homogeneous order such as the Coleoptera is at once evident, but when the attempt is made to subdivide them we are beset with difficulties. It is, perhaps, the antiquity of the Neuroptera as a whole that prevents our splitting them into well-defined groups as may with greater ease be done with the later-developed and more specialised assemblages of insects.

For our present purpose we will take six groups, or sub-orders, as follow, though perhaps the first and fifth should be divided again:—

- i. **Corrodentia** (Mallophaga or Bird-lice, White Ants, Psocids, and Embiids).
- ii. **Perlidia** (Stone-flies).
- iii. **Odonata** (Dragonflies).
- iv. **Ephemeridia** (Mayflies).
- v. **Planipennia** (Alder-flies, Snake-flies, Lace-wings, Scorpion-flies, &c.).
- vi. **Trichoptera** (Caddis-flies).

1. CORRODENTIA.

Of this sub-order the White Ants and Embiids are quite unrepresented in Britain, and at present none of the Mallophaga apparently have been recorded for the Isle of Wight. So far as at present known the British Psocids number 43, but there are no doubt more, for those interested in them are few. The list for the Island contains:—

Elipsocus cruciatus. In garden, Newport, two specimens, June 1907 (C. Morley); one specimen in house, Newport, in October 1907 (F. Morey).

2. PERLIDIA.

In the Stone-flies we have an ancient and somewhat difficult sub-order, containing 29 British species. Some are well known to

(298)

fishermen, but so far I have not a single record for the Isle of Wight, though some species, especially of the genus *Nemoura*, must be common.

3. ODONATA.

No doubt it is natural that a group of insects so large and brilliant as the Dragonflies should have received more attention than any other division of the Neuroptera. Of the 42 British species 16 have thus far been recorded. Nine others are almost certainly present—*Libellula quadrimaculata*, *Orthetrum caeruleum*, *Cordulia aenea*, *Brachytron pratense*, *Aeschna juncea*, *Ae. grandis*, *Calopteryx virgo*, *Lestes sponsa*, and *Pyrrosoma tenellum*.

Quite likely to occur are the following eight—*Sympetrum vulgatum*, *Libellula fulva*, *Gomphus vulgatissimus*, *Lestes dryas*, *Erythronma nias*, *Ischnura pumilio*, *Agrion pulchellum*, *A. mercuriale*; and possibly *Oxygastra curtisii*.

Eight others are quite unlikely and may be left out of consideration. The following are those thus far known:—

***Sympetrum striolatum*.** Ryde, Sept. 1900 (C. Morley); Parkhurst Forest (F. Morey); Borthwood (H. F. Poole); Shanklin and Ventnor (W. H. Bath); margin of ponds, Totland Bay, 12 Aug. 1907 (F. Morey); margin of Yar, Brading marshes, 16 Aug. 1907 (F. Morey).

***S. flaveolum*.** One female in very much damaged condition—probably from Parkhurst Forest (F. Morey). Of females taken in Britain extremely few are known.

***S. sanguineum*.** Near Yarmouth (J. W. Cardew).

***S. scoticum*.** Bembridge (J. W. Cardew).

***Libellula depressa*.** Parkhurst Forest (F. Morey); America Woods, 1906 (H. F. Poole).

***Orthetrum cancellatum*.** Parkhurst, 1906, a female (H. F. Poole). This is a rather local species.

***Cordulegaster annulatus*.** Parkhurst Forest (F. Morey).

***Anax imperator*.** This, the largest and one of the handsomest of European dragonflies, has been met with at Parkhurst Forest (F. Morey); and at Hyde, near Shanklin (H. F. Poole).

***Aeschna mixta*.** In general scarce as a British dragonfly, but we have four records for the Island—Shanklin, 1903, a female, and in 1904 a male (H. F. Poole); Bembridge, 1905 (J. W. Cardew); Borthwood, 1907, a male (H. F. Poole).

***Ae. cyanea*.** For this common species there are several records—Ryde, Sept. 1900 (C. Morley); near Ryde (S. A. Blenkarn); St. Catherine's Point, 13 Aug. 1903 (M. Burr); Parkhurst Forest (F. Morey); Shanklin, and Hyde near Shanklin (H. F. Poole).

***Calopteryx splendens*.** Black Pan, near Sandown, 1905 (H. F. Poole).

***Platycnemis pennipes*.** Two males—probably from Parkhurst (F. Morey).

Pyrrhosoma nymphula. Sandown Marshes, 22 May 1907, and Alverstone (H. F. Poole); Parkhurst (F. Morey).

Ischnura elegans. Evidently common. It has been noticed at—Alverstone (H. F. Poole); Sandown (S. A. Blencarn); Parkhurst (F. Morey); at margin of Yar, Brading marshes, 16 Aug. 1907 (F. Morey); Ryde salt marshes, 17 July 1902 (A. H. Hamm); St. Helens, 22 July 1902 (A. H. Hamm); Brading (A. H. Hamm). At the last named locality Mr. Hamm took a female with orange thorax, belonging to the variety *rufescens*.

Agriion puella. Parkhurst (F. Morey); at margin of pond, Heytesbury Farm, Newport, 25 May 1907 (F. Morey); Alverstone (H. F. Poole); Ryde salt marshes, 17 July 1902 (A. H. Hamm).

Enallagma cyathigerum. In field, Newport (F. Morey).

4. EPHEMERIDIA.

Here again we have a group still awaiting an Isle of Wight historian. But one small Mayfly, and that in its subimaginal condition, has so far come to hand out of 39 British species. They are interesting creatures for various reasons, one being that they fly as subimagines, having one more skin to cast before becoming perfect insects.

Ephemerella ignita. A subimago taken near stream, Carisbrooke, 13 June 1889 (F. Morey).

5. PLANIPENNIA.

In the Planipennia we have an interesting sub-order consisting of 56 species. As these are grouped in seven families, it is not surprising that we meet with much diversity in appearance, habits, and life-histories in this sub-order. Quite a considerable number of them (the 15 *Chrysopas* at least) are aphid-feeders, and therefore most useful insects. The list at present is—

Sialis lutaria. The common Alder-fly of the fisherman. Parkhurst (F. Morey).

Micromus variegatus. In garden, Newport, 21 May 1886 (F. Morey).

A specimen of *Micromus paganus* is probably from the Isle of Wight.

Chrysopa vittata. In garden, Newport (F. Morey).

C. flava. In garden, St. Helens, 14 July 1902 (A. H. Hamm).

C. flavifrons. Ryde, Aug. 1902 (C. Morley).

C. vulgaris. In garden, Shanklin, 14 Oct. 1906 (F. Morey); The Dover, St. Helens, 14 July 1902 (A. H. Hamm); beaten from oak tree, Rookley Wilderness, 22 Sept. 1906 (F. Morey).

Panorpa communis. Mr. Morey has frequently seen this Snake-fly in Parkhurst Forest.

Quite possibly some of the specimens may have been *P. germanica*, which is equally common.

6. TRICHOPTERA.

At present the Trichoptera of Britain total up to 174 species, and additions are continually being made to the list. It is therefore somewhat of a reproach to the naturalists of the Isle of Wight that 4 species only can be set down definitely as inhabiting the Island. It is not that the group is inconspicuous or obscure, for everyone is acquainted with the caddis-cases which the larvae construct as a protective covering. There is further one point in connection with the Trichoptera which is of great interest scientifically. There are some small species of this group, which appear to be at the point where the comparatively modern order of Lepidoptera took its rise. The four species noticed are:—

Limnophilus lunatus. Parkhurst (F. Morey).

L. vittatus. At margin of pond, Heytesbury Farm, near Newport, 25 May 1907 (F. Morey).

Stenophylax vibex. In house, near millpond, Newport, 6 May 1907 (F. Morey).

Rhyacophila dorsalis. Near stream, Carisbrooke, 7 April 1889 (F. Morey).

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HYMENOPTERA.

BY CLAUDE MORLEY, F.E.S., &c.

ONE of our greatest authorities on the British Bees, the late Fred. Smith of the British Museum, once said (*Entomologists' Annual*, 1857, p. 32) that he believed "the Isle of Wight to surpass all other localities in this country for its richness in Hymenopterous treasures"; and, as regards the Aculeata, this may very well be true, though it cannot yet be practically demonstrated, since collectors have recently been much fewer in the Island than they were in the sixties, when the same author thought (*Venables' Guide*, p. 447) "probably four-fifths of the British Aculeata had been found" there. This is a very high percentage, to attain which three hundred species are necessary nowadays; and, although we cannot pretend to record so many, yet our list is a very representative one, when the short time given to its compilation is considered. Far otherwise, unfortunately, is it in the other groups of the Hymenoptera, which must be considered as little more than a foundation upon which to build up a more typical fauna in a future edition of this work, or in the Proceedings of the local Natural History societies.

In the compilation of the following list, I have drawn freely upon the information supplied by brother entomologists, whose names will be found suffixed in brackets to their captures of the rarer species; as well as upon many standard works dealing with the subject in general. My own acquaintance with the Island dates from 1877, when I caught some form of typhus—not Hymenoptera!—investigating the curiosities of the Ryde seashore.

ACULEATA.

ANTS.

Formica rufa, *L.* Abundant in woods at Parkhurst, Firestone Copse, Ventnor, Norton, &c.

F. exsecta, *Nyl.* One ♂ in Parkhurst Forest in August, 1897 (E. A. Butler); previously only known in Britain from about Bournemouth.

F. fusca, *Latr.* Common: Niton, Parkhurst, Sandown, &c., in sandy places.

Lasius fuliginosus, *Latr.* Luccombe, Marvel, Firestone, and Newport, on tree-trunks.

L. umbratus, *Nyl.* Probably common: Shide (Frank Morey).

L. flavus, *De G.* Common throughout the Island.

L. niger, *L.* Niton, Newport, Ryde, &c.; abundant.

Tapinoma erraticum, *Latr.* Several ♂ ♂ taken in Parkhurst Forest, Aug., 1907 (Butler).

Ponera contracta, *Latr.* Ventnor (Saunders' *Aculeata* of Brit. Isles).

Myrmecina Latreillei, *Curt.* "This is one of the rarest ants that occur in this country; the ♂ was first discovered by Mr. Curtis, in 1829, near Blackgang Chine, where it has been subsequently taken by other entomologists; it is not unlikely to be found in most parts at the back of the Island, having myself found it both at Luccombe and Shanklin" (Smith).

Tetramorium caespitum, *L.* Abounds along the Undercliff (Smith); Sandown (G. E. Frisby).

Stenamma Westwoodi, *West.* Freshwater (Saunders).

Leptothorax tuberum, *F.* Ventnor, March, 1880 (Saunders).

Myrmica rubra, *L.* Races *laevinodis*, *ruginodis* and *scabrinodis* common.

Solenopsis fugax, *Latr.* Taken at Sandown by Canon Fowler (Saunders); in some numbers at Blackgang, at roots of *Arenaria maritima*, Aug., 1908 (Donisthorpe).

SOLITARY WASPS.

Mutilla rufipes, *Latr.* Luccombe, St. Helens, and common at Sandown. Mr. Donisthorpe has taken ♂ ♂ at Luccombe and Chale and ♀ ♀ at Blackgang in August of this year—1908.

Myrmosa melanocephala, *F.* Sandown, Luccombe, St. Helens, and Marvel Cope.

Methoca ichneumonides, *Latr.* A very rare species, first found in Britain by Curtis at Blackgang Chine in August; a ♂ taken near Ventnor by Pascoe in 1867; four ♀ ♀ by Rothney in 1871 at Sandown; a ♀ at Blackgang Chine, Aug., 1908 (Donisthorpe).

Tiphia femorata, *F.* Freshwater Bay (Saunders).

Pompilus unicolor, *Spin.* Rare, and only found at Steephill Cove, near Ventnor, in July.

P. bicolor, *Lep.* Three ♀ ♀ and the first British ♂ ♂ were taken near Ventnor by Rothney in 1871.

P. rufipes, *L.* Not uncommon at St. Helens and Sandown in July and August.

P. plumbaeus, *F.* On coast along whole back of Island; also at St. Helens.

P. chalybeatus, *Sch.* St. Helens and Bembridge (A. H. Hamm).

P. gibbus, *F.* Ryde (Frisby); Blackgang Chine, 22nd June, 1907 (Elliott).

P. pectinipes, *Lind.* St. Helens (Hamm).

P. pusillus, *Schödt.* The Undercliff, in August, 1876 (Butler).

Salix fuscus, *L.* Ryde and Ventnor (Frisby); a ♀ in Marvel Copse in May (Morey).

S. exaltatus, *F.* Bembridge, St. Helens, &c., common.

S. obtusiventris, *Sch.* Rare: taken by Rothney in 1871 (*Ent. Ann.* 1872, p. 98); St. Helens, July, 1899 (Hamm); Steephill, near Ventnor (Frisby).

Calicurgus hyalinatus, *F.* Sandown (Saunders).

Pseudagenia carbonaria, *Scop.* I took the only specimen of this very rare species yet found in the Island—a ♂, in Parkhurst Forest, 21st June, 1907.

Agenia variegata, *L.* Taken at Steephill, near Ventnor in 1871, by Rothney.

Astutus boops, *Schr.* Blackgang, Ventnor, Bonchurch, St. Helens, &c., in July and August.

A. stigmus, *Panz.* Only taken at St. Helens, by Saunders and Frisby.

Tachytes unicolor, *Panz.* Local: Luccombe Chine, Sandown Bay, and about Ventnor.

T. pectinipes, *L.* Common in July: St. Helens, Sandown, &c.

Trypoxylon figulus, *L.* Common: St. Helens, Ryde, Sandown, &c.

T. clavicercum, *Lep.* Common in Newport gardens, St. Helens, Sandown, &c.

Ammophila sabulosa, *L.* Abundant: Parkhurst Forest, St. Helens, and Sandown.

A. hirsuta, *Scop.* Sandown (Frisby); I took a ♀ at Blackgang Chine, 22nd June, 1907.

A. lutaria, *F.* Sandown Bay in August and September (Venables' Guide, 1860).

Pemphredon lugubris, *F.* Yarmouth woods, St. Helens, Sandown, and Ryde.

P. Shuckardi, *Mor.* St. Helens (Hamm); Ryde, in August (Morley).

P. lethifer, *Shuck.* Sandown (Frisby); St. Helens (Hamm).

P. morio, *Lind.* One ♀ in a greenhouse, The Elms, Appley, Ryde, August, 1902 (Morley).

Diodontus minutus, *F.* Common in July. The Landslip, in August (Butler).

D. luperus, *Shuck.* St. Helens; Bembridge; and at Niton by Rev. T. A. Marshall.

D. tristis, *Lind.* Uncommon: Isle of Wight (Victoria History); Sandown (Frisby).

Passalaecus corniger, *Shuck.* Probably common: Ryde garden and Havenstreet (Morley).

P. insignis, *Lind.* St. Helens and Sandown.

P. gracilis, *Curt.* Havenstreet woods (Morley); St. Helens (Saunders).

P. monilicornis, *Dah.* In a Ryde garden, in August (Morley).

Psen Shuckardi, *Wesm.* Isle of Wight (Saunders' Aculeata).

P. bicolor, *F.* Isle of Wight (Victoria History).

P. unicolor, *Lind.* Isle of Wight (Saunders' Aculeata).

Psenulus pallidipes, *Panz.* A ♂ in Norton Wood, Yarmouth, 20th June, 1907 (Morley).

Gorytes tumidus, *Panz.* St. Helens, early in July, 1899 (Hamm).

G. quadrifasciatus, *F.* Brading (Frisby).

G. mystaceus, *L.* I took a ♀ of this common species at Havenstreet in June.

Nysson interruptus, *F.* Two ♂ ♂ occurred to me on *Heracleum* at Merston and Godshill, June, 1907.

N. dimidiatus, *Jur.* St. Helens, early in July, 1899 (Hamm).

Didineis lunicornis, *F.* "The Rev. G. T. Rudd took both sexes at Ryde in 1836"—not again noticed in Britain till 1863 (Ent. Ann. 1864, p. 111); I swept one from long grass at Spring Vale, in August, 1903.

Mellinus arvensis, *L.* Common: Sandown, Luccombe, Newport, &c., in July.

Philanthus triangulum, *F.* "In the year 1851, I captured *P. triangulum* in great numbers in Sandown Bay, since which it has been taken in the same situation by other entomologists; but I have reason to fear this fine insect has now quitted that locality. Mr. Pascoe, some months during the past season, searched diligently without finding a single specimen" (Smith, Ent. Ann. 1868, p. 86). Not since recorded.

Cerceris rybyensis, *L.* Ventnor and Sandown Bay (Venables' Guide).

C. arenaria, *L.* Common in July: St. Helens, Sandown, Ventnor, Luccombe, &c.

C. labiata, *F.* Sandown (Saunders).

Oxybelus uniglumis, *L.* Common throughout the Island.

Crabro clavipes, *L.* Parkhurst Forest (Morey); Ryde and Newport, local (Morley).

C. leucostomus, *L.* Ryde and Sandown (Frisby).

C. podagricus, *Lind.* Common: St. Helens, Newport, Ventnor, &c.

C. palmipes, *L.* Shanklin (Frisby).

C. varius, *Lep.* Sandown (Frisby & Vic. Hist.); a ♂ in Rookley Wilderness, in August (Butler).

- C. Wesmaeli**, *Lind.* St. Helens (Hamm); Sandown (Frisby).
C. elongatulus, *Lind.* Common at Ryde, Sandown, &c., in July.
C. quadrimaculatus, *Dah.* Common in July at Brading, &c.
C. dimidiatus, *F.* Ryde (Frisby); a ♀ in my house at Newport in July (Morey).
C. cavifrons, *Thoms.* Common: St. Helens, Ryde, Brading, &c.
C. vagus, *L.* Sandown (Frisby); St. Helens, in July, 1899 (Hamm).
C. cribrarius, *L.* Doubtless common but only found by Hamm at St. Helens.
C. peltarius, *Sch.* St. Helens, Luccombe, Sandown, and Spring Vale.
C. lituratus, *Panz.* I captured this species in a Ryde garden in August, 1902.
C. Panzeri, *Lind.* Sandown Bay in July (Frisby & Ent. Month. Mag. 1899, p. 70).

SOCIAL WASPS.

- Vespa Crabro**, *L.* Apparently rare: St. George's Down (Morey).
V. vulgaris, *L.* Common everywhere.
V. germanica, *Fab.* As common as preceding.
Odynerus melanocephalus, *Gmel.* Captured at Spring Vale (Frisby).
O. callosus, *Thoms.* Ryde (Morley & Frisby); St. Helens (Prof. Poulton).
O. parietum, *L.* Probably not uncommon: Ryde and Newport; Sandown, in August (Butler).
O. pictus, *Curt.* One ♂ near Newport (Morey); Sandown (Frisby).
O. trifasciatus, *Oliv.* One ♂ taken about Newport (Morey).
O. parietinus, *L.* Sandown, Newport, and Whitecliff Bay in July.
O. Antilope, *Panz.* St. Helens, early in July (Hamm); a ♂ near Newport (Morey).
O. trimarginatus, *Zett.* Sandown and Bembridge, in August (Butler).

BEES.

- Colletes succincta**, *L.* Luccombe Chine, in August, 1907, and near the Needles in August, 1876 (Butler).
C. fodiens, *Kirb.* Common: Bembridge, St. Helens, and Sandown.
C. picistigma, *Thoms.* Chewton, Sea View, St. Helens, Bembridge, and Spring Vale.
C. marginata, *Sm.* Abundant on "The Dover" sandhills at St. Helens; and at Bembridge.
C. Daviesana, *Sm.* Very common along the face of the Sandown cliffs in July.

C. cunicularia, *L.* The first British specimens were taken by Isaac Cooke "near Ventnor, in May, 1867; four ♂♂ and five ♀♀ occurred at that time. In May last, Mr. Alfred Owen again found it near Ventnor" (Smith, Ent. Ann. 1870, p. 21). Not since recorded.

Prosopis spilota, *Först.* Taken at Spring Vale (Frisby).

P. dilatata, *Kirb.* Blackwater (Vic. Hist.); St. Helens in July (Saunders); in old oyster beds, Brading Harbour, in July (Hamm); both sexes at Steephill Cove (Frisby & Ent. Mon. Mag. 1899, p. 70).

P. communis, *Nyl.* Ryde, Bembridge, Brading, Sandown, Ventnor, Newport, &c.

P. hyalinata, *Sm.* Binstead, St. Helens, Brading, Sandown, Ventnor; common at Newport.

P. confusa, *Nyl.* Uncommon: St. Helens in July (Saunders); Parkhurst in June (Morley).

P. brevicornis, *Nyl.* St. Helens in July (Saunders & Hamm).

Sphecodes gibbus, *L.* Godshell, St. Helens, and the Havenstreet woods.

S. reticulatus, *Thoms.* Taken at St. Helens (Saunders & Frisby).

S. subquadratus, *Sm.* Sandown in July (Hamm).

S. puncticeps, *Thoms.* St. Helens and Sandown (Hamm); Ventnor in June (Morley).

S. rubicundus, *Hag.* The only I. of W. specimens were found, in 1899, by Hamm at Whitecliff Bay.

S. affinis, *Hag.* Sandown in July (Hamm).

Halictus rubicundus, *Chr.* Sandown (Frisby).

H. maculatus, *Sm.* A ♀ taken in July in Sandown Bay (Ent. Ann. 1858, p. 41).

H. xanthopus, *Kirb.* Ventnor in September (Venables' Guide).

H. leucozonius, *Schr.* St. Helens in July, and Ryde in September.

H. zonulus, *Sm.* Havenstreet, Norton Woods, Calbourne, and Parkhurst Forest (Morley).

H. quadrinotatus, *Kirb.* Brading and St. Helens, in July.

H. laevigatus, *Kirb.* Ventnor, St. Helens, and the Havenstreet woods in June.

H. cylindricus, *F.* Abundant: Sandown, Binstead, the Undercliff, &c.

H. albipes, *Kirb.* Two ♀♀ on *Heracleum* at Godshell, June, 1907 (Morley); Sandown, in August (Butler).

H. malachurus, *Kirb.* Ventnor and Freshwater (Saunders' Aculeata); Sandown, in August (Butler).

H. longulus, *Sm.* Plentiful in 1854; Freshwater and Ventnor (Saunders).

H. pauxillus, *Schk.* St. Helens, in July, 1895 (Saunders).

H. villosulus, *Kirb.* Common: Sandown, St. Helens, and the Havenstreet woods.

H. puncticollis, *Mor.* Swept in Marvel Copse, April, 1889 (Morey); St. Helens, July, 1899 (Hamm); Bembridge, 1902 (Saunders); Havenstreet woods, 1907 (Morley).

H. laevis, *Kirb.* "The only known locality is Ventnor, where it is very rare in September" (Venables' Guide.—cf. Saunders' *Aculeata*, p. 220).

H. breviceps, *Saund.* I took ♀ ♀ at Rookley Wilderness and Ventnor Landslip, at the end of June, 1907.

H. punctatissimus, *Schk.* Common: St. Helens, Havenstreet woods, &c.

H. nitidiusculus, *Kirb.* Common: Ryde, Sandown, and St. Helens.

H. minutissimus, *Kirb.* Parkhurst, Ryde, St. Helens, &c.

H. tumulorum, *L.* Common: Godshill, Sandown, and Whitecliff Bay, in flowers.

H. Smeathmannellus, *Kirb.* Common: St. Helens, Sandown, Ventnor, and Ryde.

H. morio, *F.* Abundant: St. Helens, Sandown, Carisbrooke, and Ryde.

H. leucopus, *Kirb.* Probably common: St. Helens (Hamm).

Andrena albicans, *Kirb.* Ryde, Shanklin, and Newport, on flowers.

A. pilipes, *F.* Sandown (Frisby); Ventnor by Rothney in 1871 (Ent. Ann. 1872, p. 98); the Undercliff, in August (Butler).

A. rosae, *Panz.* Ventnor (Saunders); Ryde (Frisby).

A. thoracica, *F.* Ventnor by Rothney in 1871 (Ent. Ann. 1872, p. 98); Shanklin (Morey).

A. nitida, *Fourc.* Taken at Ryde by Frisby (Vic. Hist.).

A. fulva, *Schr.* Only recorded from Ryde; probably common.

A. Clarkella, *Kirb.* Taken at Ryde by Frisby (Vic. Hist.).

A. nigroaenea, *Kirb.* Probably common: Ryde (Frisby); Norton Wood (Morley).

A. Gwynana, *Kirb.* Bembridge, August, 1901 (Saunders); Ryde (Frisby).

A. varians, *Rossi.* Not uncommon: Binstead and about Newport.

A. simillima, *Sm.* Smith took this new species first at the Bonchurch Landslip, in August (Ven. Guide); found at Ventnor by Rothney (Saunders).

A. fulvicrus, *Kirb.* Brading, Sandown, Luccombe, Shanklin, and Ventnor.

A. Hattorfiana, *F.* Ventnor, taken by Rothney in 1871 (Ent. Ann. 1872, p. 98).

A. cingulata, *F.* Taken at Firestone Copse (Frisby).

A. chrysosceles, *Kirb.* Merston, St. Helens, Brading, Binstead, Ryde, and Sandown.

A. fulvago, *Chr.* Freshwater (Saunders); Binstead (Frisby); ♀ ♀ at Calbourne and Newport, in June, 1907 (Morley).

A. humilis, *Imh.* Freshwater (Saunders' Aculeata).

A. labilis, *Kirb.* Ryde and Havenstreet (Frisby).

A. minutula, *Kirb.* Ryde, Sandown Parkhurst Forest, and Godshill.

A. nana, *Kirb.* Common: St. Helens, Merston, Godshill, &c.

A. Wilkella, *Kirb.* Taken at Ryde (Frisby).

Cilissa leporina, *Panz.* St. Helens, in July, 1899 (Hamm); Brading, in August, 1876 (Butler).

Dasypoda hirtipes, *Latr.* Locally plentiful: Sandown Bay, St. Helens, Spring Vale, and Wootton.

Panurgus calcaratus, *Scop.* Extremely local: Luccombe Chine, Blackheath, and Sandown.

Nomada Roberjeotiana, *Panz.* Blackwater (Vic. Hist.).

N. fucata, *Panz.* Locally plentiful: Sandown Bay, July and August (Ven. Guide).

N. succincta, *Panz.* Generally distributed: St. Helens (Prof. Poulton); &c.

N. alternata, *Kirb.* Common throughout the Island (Frisby).

N. jacobeeae, *Panz.* Whitecliff Bay, in July, 1899 (Hamm); Sandown, in August, 1876 (Butler).

N. Lathburiana, *Kirb.* Taken in the Isle of Wight by Mr. Dale (Saunders' Aculeata).

N. ruficornis, *L.* Taken about Newport by Morey (Morley).

N. ochrostoma, *Kirb.* I. of W. (Saunders); a ♀ in Parkhurst Forest, June, 1907 (Morley).

N. armata, *Schf.* Taken at Ventnor by Pascoe and Rothney in 1867 and 1871; and by Prof. Poulton at St. Helens, August 10th, 1902.

N. Fabriciana, *L.* Sandown and Ventnor (Frisby).

N. flavoguttata, *Kirb.* I beat a ♂ from the undergrowth in Norton Wood, 20th June, 1907.

Epeolus productus, *Thoms.* Only recorded from Sandown and St. Helens.

E. rufipes, *Thoms.* By Champion in Isle of Wight (Saunders); St. Helens (Hamm).

Chelostoma florissomne, *L.* I took a ♀ flying to flowers, Norton Wood, June 20th, 1907.

Coelioxys conoidea, *Illig.* Curtis first discovered this species in Britain at Ventnor; it was very plentiful all along the Undercliff in 1854, and was taken in Sandown Bay in 1856. Recorded from Blackgang Chine in 1860. Pascoe failed to find it in 1867; but it has recently turned up at Sandown and St. Helens, in July and August.

C. rufescens, *Lep.* Plentiful in I. of W. in 1854; recently at Sandown and St. Helens with its variety, *umbrina*, Sm., which is found all along the Undercliff.

Megachile maritima, *Kirb.* Common and generally distributed: Sandown, St. Helens, &c.

M. Willughbiella, *Kirb.* St. Helens, in July, 1899 (Hamm).

M. ligniseca, *Kirb.* The Landslip, August, 1876 (Butler).

M. centuncularis, *L.* Ryde (Frisby); Bembridge golf links on ragwort (Morley).

M. argentata, *F.* All coasts: Ventnor, Sandown, Bembridge, St. Helens, &c.

Osmia rufa, *L.* Common: Ryde, Sandown, &c.

O. xanthomelana, *Kirb.* Shanklin (Ent. Ann. 1860, p. 93); Sandown (Ven. Guide and Saunders).

O. caerulescens, *L.* Sandown (Frisby).

O. Leaiana, *Kirb.* Isle of Wight (Hamm); Ventnor (Frisby).

O. aurulenta, *Panz.* Taken in the Isle of Wight by Rothney (Saunders' *Aculeata*).

O. spinulosa, *Kirb.* Bonchurch Landslip; the Undercliff, in August (Butler); Luccombe Chine, Ventnor, in July (E.M.M. 1899, p. 70).

Stelis aterrima, *Panz.* Not uncommon on thistles at St. Helens, July, 1899 (Hamm).

Anthidium manicatum, *L.* St. Helens, in July (Hamm); Wootton (Frisby).

Eucera longicornis, *L.* Not rare: Havenstreet, Wootton, St. Helens, &c.

Melecta armata, *Panz.* Generally distributed among *Andrena pilipes* (Hamm).

Anthophora pilipes, *F.* Common: Whitecliff, Shanklin, Newport, Ryde, and Ventnor.

A. furcata, *Panz.* Sandown, St. Helens, Havenstreet, &c.

Sarapoda bimaculata, *Panz.* Very numerous in the Island in 1856; in great numbers in Sandown Bay in 1871; very local but burrowing commonly in Sandown Cliffs in 1860. Generally distributed in 1899 (Hamm); Sandown (Frisby & Butler).

Psithyrus rupestris, *F.* Common: St. Helens, Sandown, &c.

P. vestalis, *Fourc.* Common: St. Helens, Sandown, &c.

P. barbutellus, *Kirb.* Taken at St. Helens (Prof. Poulton); and Newport (Morey).

P. campestris, *Panz.* Found near Newport (Morey).

P. quadricolor, *Lep.* One specimen taken near Newport by Morey (in coll. Morley).

Bombus venustus, *Sm.* Common throughout the Island.

B. agrorum, *F.* Abundant: Ryde golf links, &c.

B. Latreillellus, *Kirb.* Sandown, in August, 1876 (Butler).

B. hortorum, *L.* Very common everywhere.

B. sylvorum, *L.* Not uncommon: Ryde, &c. (Morley); the Undercliff, in August (Butler).

B. Derhamellus, *Kirb.* Generally distributed and not uncommon.

B. lapidarius, *L.* Common: Shanklin, Yarmouth, Ryde, &c.

B. pratorum, *L.* Not uncommon: Newport, Ryde, &c.

B. terrestris, *L.* Abundant: Newport, Ryde, Shanklin, &c.
Apis mellifica, *L.* Everywhere.—Note the Bee Plague in the Island (cf. Board of Agriculture's Journal, 1907, pp. 129—140).

TENTHREDINIDAE.

SAWFLIES.

Macrocephus linearis, *Schr.* I swept a ♀ in a meadow near Yarmouth, 20th June, 1907.

Cephus pallidipes, *Klg.* Gurnard Bay, June, 1884 (Morey); Rookley Wilderness, Parkhurst Forest, Yarmouth, and abundant at Sandown in June (Morley).

C. pygmaeus, *L.* Newport (Morey); I took a ♂ in Havenstreet woods, June, 1907.

C. pilosulus, *Thoms.* Both sexes occurred to me in Parkhurst Forest in June.

Sirex gigas, *L.* A ♀ in a gravel-pit, St. George's Down (Morey).

S. noctilio, *F.* Taken in a timber-yard, Newport (Morey).

Cladius pectinicornis, *Fourc.* I took it at Ryde in May and August, 1903.

Trichiocampus Drewseni, *Thoms.* Has occurred to me in a Ryde greenhouse, August, 1902.

Hemichroa alni, *L.* I swept a ♀ in Rookley Wilderness, 27th June, 1907.

Cryptocampus saliceti, *Fall.* A ♂ was in my sweep-net at Calbourne, 26th June, 1907.

Croesus septentrionalis, *L.* Isle of Wight (Vic. Hist.).

Pteronus ribesii, *Scop.* Both sexes at Newport (Morey); Ryde in August, 1903.

P. melanaspis, *Htg.* I took a ♂ at Merston, 23rd June, 1907.

Pachynematus rumicis, *Fall.* A ♂ occurred to me in Norton Wood, 20th June, 1907.

Pristiphora fulvipes, *Fall.* A ♀ I swept at Rookley Wilderness, 27th June, 1907.

P. crassicornis, *Htg.* I found this in a Ryde greenhouse, in August, 1902; a ♀ in Rookley Wilderness, August (Morey).

Eriocampoides aethiops, *F.* I. of W. (Vic. Hist.); larvae on garden rose, Ryde, Oct., 1901.

E. limacina, *Retz.* Isle of Wight (Vic. Hist.).

Tomostethus dubius, *Gmel.* A ♀ of the var. *nigrans* in Havenstreet woods, 28th June, 1907.

T. luteiventris, *Klg.* A ♀ in Rookley Wilderness, 27th June, 1907 (Morley).

T. fuliginosus, *Schr.* A ♂ in Rookley Wilderness, August (Morey).

Blennocampa pusilla, *Thoms.* I. of W. (Vic. Hist.); I have taken a ♀ in Norton Wood in June.

Monophadnus albipes, *Gmel.* Isle of Wight (Vic. Hist.).

Entodecta pumila, *Klg.* I swept a ♀ in Rookley Wilderness, 27th June, 1907.

Athalia lineolata, *Morice.* Common: Yarmouth, Parkhurst, Havenstreet, Newport, Marvel Copse, Ryde.

Selandria stramineipes, *Klg.* Probably common: I found it in Havenstreet woods in June.

S. morio, *F.* A ♀ occurred to me at Calbourne, 26th June, 1907.

S. serva, *F.* I swept a ♂ in Rookley Wilderness, 27th June, 1907.

Eriocampa ovata, *L.* Isle of Wight (Vic. Hist.).

Poecilosoma luteolum, *Klg.* Isle of Wight (Vic. Hist.).

Emphytus cinctus, *L.* Both sexes flying in a lane at Newport, May and June, 1885 (Morey).

Dolerus palustris, *Klg.* Newport (Morey); a ♀ at Rookley Wilderness, 27th June (Morley).

D. gonager, *Klg.* Newport in June (Morey).

D. nigratus, *Morice.* Freshwater, 16th April, 1883 (Morey).

D. sanguinolentus, *Morice.* A ♀ of the var. *ravus* at Newport (Morey).

D. aeneus, *Htg.* I swept a ♂ in Rookley Wilderness, 27th June, 1907.

Tenthredopsis Coqueberti, *Klg.* Swept at Bembridge, 24th June, 1889 (Morey).

T. acupariae, *Klg.* Taken flying near Yarmouth in April, 1883 (Morey).

T. litterata, *Geof.* A ♀ of the var. *cordata* at Newport (Morey).

T. dorsalis, *Lep.* I found ♂ ♂ at Yarmouth and Parkhurst Forest in June, 1907.

Rhogogastera viridis, *L.* A ♀ was in my sweep-net at Calbourne, 26th June, 1907.

R. punctulata, *Klug.* I swept a ♀ at Ningwood, 26th June, 1907.

R. picta, *Klg.* A ♂ occurred to me in the Havenstreet woods, 28th June, 1907.

Macrophya annulata, *Morice.* I took two ♂ ♂ at Parkhurst and Havenstreet woods, June, 1907.

Allantus arcuatus, *Fourc.* Common on flowers at Godshill, Wroxall, and Calbourne in June.

A. temulus, *Morice.* Common on flowers at Yarmouth in June.

Tenthredo livida, *L.* Swept in Marvel Copse, 28th June, 1887 (Morey).

T. bicincta, *L.* Marvel Copse (Morey); on flowers, Norton and Parkhurst (Morley).

EVANIIDAE.

Hyptia minuta, *F.* One specimen captured by Mr. E. A. Butler at Sandown, in August, 1907.

CHRYSIDIDAE.

RUBY-TAIL WASPS.

Elampus aeneus, *F.* Found at St. Helens, early in July, 1899 (Hamm).

Hedychridium ardens, *Coq.* Found at St. Helens, early in July, 1899 (Hamm).

Chrysis cyanea, *L.* St. Helens (Hamm).

C. viridula, *L.* One taken flying about a brick wall in Newport (Morey).

C. ignita, *L.* Shanklin, and several at Newport (Morey); Norton Wood and Shanklin in June (Morley); common in the Island in July, 1899 (Hamm).

ICHNEUMONIDAE.

ICHNEUMON FLIES.

Coelichneumon bilineatus, *Gr.* A ♀ at Newport (Morey).

Cratichneumon annulator, *F.* Common in June, 1907: Havenstreet, Parkhurst, and Norton.

Melanichneumon leucomelas, *Gmel.* Newport (Morey); in a Ryde greenhouse, August, 1902.

Barichneumon sexalbus, *Wesm.* In Ryde greenhouse, August, 1903.

B. chionomus, *Wesm.* In Ryde greenhouse, August, 1903.

Ichneumon sarcitorius, *L.* A ♀ on *Heracleum* flower at Wroxall, June, 1907.

I. subquadratus, *Thoms.* A ♂ in Parkhurst Forest, 21st June, 1907.

I. analis, *Gr.* Taken at Sandown by Marshall (Morley's Brit. Ichneumons).

I. extensorius, *L.* Swept at Spring Vale, August, 1903.

I. confusorius, *F.* Newport (Morey); ♂♂ at Havenstreet and Ventnor Landslip in June.

I. gracilicornis, *Gr.* I swept a ♂ at Ningwood, 26th June, 1907.

Ctenichneumon flavocinctus, *Desv.* One ♂ occurred to me on flowers at Wroxall in June.

Amblyteles palliatorius, *Gr.* A ♂ at Newport (Morey).

A. atratorius, *F.* One ♀ taken in Marvel Copse, August, 1907 (Butler).

A. vadatorius, *Illig.* Taken in the Isle of Wight by Morey (in coll. Morley).

A. armatorius, *Forst.* A ♀ at Newport (Morey).

Platylabus phaleratus, *Hal.* I. of W., taken by F. Bond (Morl. Ichn. Brit.).

P. rubellus, *Gmel.* I swept a ♂ in Rookley Wilderness, 27th June, 1907.

Phaeogenes fuscicornis, *Wesm.* A ♀ on *Heracleum* at Godshill, 29th June, 1907.

Diadromus troglodytes, *Gr.* A ♀ swept in Parkhurst Forest, 21st June, 1907.

Aethecerus nitidus, *Wesm.* Ryde garden, Oct., 1901 (Morl. Ichn. Brit.); Newport (Morey).

Dicaelotus pumilus, *Gr.* A ♂ in Marvel Copse, 25th June, 1907.

D. rufilimbatus, *Gr.* Dead, in a Ryde greenhouse, August, 1902 and 1903.

Alomyia debellator, *F.* Taken in the Island by Morey: probably common in autumn.

CRYPTID FLIES.

Microcryptus abominator, *Gr.* Newport (Morey); Norton Wood and Osborne House in June.

M. nigrocinctus, *Gr.* A ♂ at the Ventnor Landslip, 29th June, 1907.

M. labralis, *Gr.* A ♂ in Parkhurst Forest, 21st June, 1907.

Cremnodes atricapillus, *Gr.* I swept a ♀ at Spring Vale in August, 1903.

Glypticnemis brevis, *Gr.* A ♂ on *Heracleum* flower at Merston: probably common.

G. erythrogastra, *Gr.* A ♀ at Godshill, 29th June, 1907.

Phygadeuon nanus, *Gr.* I swept a ♂ in Parkhurst Forest, 21st June, 1907.

P. ovatus, *Gr.* A ♀ on flowers at Shanklin, 29th June, 1907.

P. dumetorum, *Gr.* Newport (Morey); Norton, Shalfleet, and Ryde (Morley).

P. variabilis, *Gr.* Parkhurst Forest, Shalfleet, and Godshill in June, 1907.

P. ingrediens, *Först.* I took a ♀ in Marvel Copse, 25th June, 1907.

P. fumator, *Gr.* Common: Ryde, Rookley, Havenstreet, Norton, Marvel, Carisbrooke.

P. dimidiatus, *Thoms.* A ♀ occurred to me in Marvel Copse, 25th June, 1907.

Panargyrops tenuipes, *Gr.* Common: Ryde, Spring Vale, Newport, and Shalfleet.

Hemiteles marginatus, *Bridg.* One ♀ taken in Norton Wood, 20th June, 1907.

H. similis, *Gmel.* I took this species on the window of a Ryde house, Oct. 1901.

H. aestivalis, *Grav.* A ♂ swept in Marvel Copse, 25th June, 1907.

H. pedestris, *F.* ♂ ♂ swept in Parkhurst Forest and Marvel Copse, June, 1907.

H. oxyphimus, *Gr.* In Ryde greenhouse, August, 1902.

H. areator, *Panz.* Swept in Parkhurst Forest, August, 1907 (Morey).

Cecidonomus gallicola, *Bridg.* In a Ryde greenhouse, August, 1902 and 1903.

Pezomachus anthracinus, *Först.* Found at Sandown Red Cliff, 29th June, 1907.

P. vagans, *Oliv.* A ♀ in Rookley Wilderness, 27th June, 1907.

P. instabilis, *Först.* Spring Vale, August, 1903, and Calbourne, June, 1907.

P. pedicularius, *F.* A ♀ in the Havenstreet woods, 28th June, 1907.

P. fasciatus, *F.* Swept in Marvel Copse, 9th September, 1907 (Morey).

Stilpnus dryadum, *Curt.* A ♂ at Shalfleet, 26th June, 1907.

Atractodes vestalis, *Hal.* A ♀ swept in Marvel Copse, 9th September, 1907 (Morey).

Mesostenus obnoxius, *Gr.* Several among larvae of their host, *Zygæna filipendulae*, on trefoil at Sandown Red Cliff, 29th June, 1907.

M. transfuga, *Gr.* I beat the first authentic British specimen of this species from trees in Norton Wood, 20th June, 1907 (cf. E.M.M. 1907, p. 273).

Pycnocryptus peregrinator, *L.* Both sexes in the Havenstreet woods, 28th June, 1907.

Cryptus tarsoleucus, *Schr.* A ♂ at Newport (Morey).

C. obscurus, *Gr.* A ♀ swept in Marvel Copse, 9th September, 1907 (Morey).

C. armatorius, *F.* I took a ♀ flying in Blackgang Chine, 22nd June, 1907.

Echthrus nubeculatus, *Gr.* A ♀ taken at Newport, 2nd July, 1885 (Morey).

PIMPLID FLIES.

Collyria calcitrator, *Gr.* Abundant in fields: Ningwood, Calbourne, Yarmouth, and Godshill.

Perithous mediator, *F.* A ♀ in Ryde greenhouse, October, 1901.

Pimpla instigator, *F.* Several times taken in Newport.

P. examiner, *F.* Several in the Norton and Havenstreet woods, in June.

P. turionellæ, *L.* Rookley Wilderness, Spring Vale, and Norton Wood.

P. maculator, *F.* Flying about a yew in Ryde garden, October, 1901.

P. graminellæ, *Schr.* A ♀ at Ningwood, 26th June, 1907.

P. detrita, *Holmgr.* Parkhurst Forest and Rookley (Morey); Shalfleet, &c., common.

P. inanis, *Gr.* A ♂ taken in I. of W. by Rev. T. A. Marshall (in coll. Morley).

Glypta fronticornis, *Gr.* Common in Rookley Wilderness (Morey and Morley).

G. haesitator, *Gr.* In Ryde greenhouse, August, 1903.

G. trochanterata, *Bridg.* A ♀ swept at Shalfleet, 26th June, 1907.

Lissonota bellator, *Gr.* Common: Marvel Copse (Morey); Ryde, Spring Vale, Ningwood, &c.

L. cylindrator, *Vill.* One ♂ swept in Rookley Wilderness, 8th August (Morey).

L. sulphurifera, *Gr.* In Ryde greenhouse, August, 1903.

Meniscus murinus, *Gr.* A ♀ at Newport (Morey).

Oedematopsis scabriculus, *Gr.* A ♂ in house at Newport, 10th August, 1906 (Morey).

TRYPHONID FLIES.

Mesoleptus typhae, *Gr.* A ♀ swept on Arreton Down [450ft.] 23rd June, 1907.

Megastylus mediator, *Sch.* Swept at Shalfleet, 26th June, 1907.

M. borealis, *Hol.* Taken at Ryde, October, 1901.

Mesoleius insolens, *Gr.* Taken at Ryde, October, 1901.

Tryphon vulgaris, *Hol.* One ♀ at Newport (Morey).

T. trochanteratus, *Hol.* A ♀ on house-window in Newport, 23rd June, 1884 (Morey).

Adelognathus brevicornis, *Hol.* I took the only British specimen of this species by sweeping in Marvel Copse, 25th June, 1907 (cf. E.M.M. 1907, p. 274).

Polyblastus varitarsus, *Gr.* Swept in Parkhurst Forest, 21st June, 1907.

Exochus coronatus, *Gr.* Several in a Ryde greenhouse, September, 1899, and October, 1901.

Zootrephus rufiventris, *Gr.* Newport garden in May (Morey).

Bassus laetatorius, *F.* Common: Rookley (Morey); Ryde, Norton Wood, &c.

Homoporus cinctus, *Gr.* A ♂ in Norton Wood, 20th June, 1907.

H. pectoratorius, *Gr.* In Ryde greenhouse, August, 1903.

H. tarsatorius, *Panz.* With the last.

H. ornatus, *Gr.* In Ryde greenhouse, August, 1902.

H. reflexus, *Morley.* With the last.

H. incisus, *Thoms.* In Ryde greenhouse, August, 1903.

H. pumilus, *Hol.* Norton Wood, Calbourne, and Ryde.

H. dimidiatus, *Schr.* In Ryde greenhouse, August, 1902.

H. elegans, *Gr.* With the last.

Promethus sulcatus, *Gr.* Swept in Newport garden (Morey); Rookley Wilderness.

P. albicoxa, *Thoms.* Spring Vale, August, 1903.

P. pulchellus, *Hol.* In gardens: Newport in May (Morey); Ryde in August, 1902.

Exetastes guttatorius, *Gr.* One ♂ taken in Havenstreet woods, 28th June, 1907.

OPHIONID FLIES.

Ophion luteus, *L.* Doubtless abundant: Ryde, Sept., 1899.

Schizoloma amicta, *F.* Isle of Wight (Morey).

Anomalon ruficorne, *Gr.* A ♀ at Newport (Morey).

A. tenuicorne, *Gr.* Swept in Parkhurst Forest, 21st June, 1907.

Anilasta ebenina, *Gr.* One ♀ swept in Marvel Copse, 19th April, 1889 (Morey).

Meloboris crassicornis, *Gr.* One ♀ on flowers at Shanklin, 29th June, 1907.

Mesochorus fuscicornis, *Brisch.* Swept in Marvel Copse, 25th June, 1907.

Porizon hostilis, *Gr.* A ♂ in the Ventnor Landslip, 29th June, 1907.

BRACONIDAE.

Bracon fulvipes, *Nees.* Swept commonly at Rookley Wilderness, 27th June, 1907.

B. stabilis, *Wesm.* A ♀ at Sandown, 23rd June, 1907.

B. exarator, *Marsh.* Ventnor, 29th June, 1907.

B. vectensis, *Marsh.* Ile de Wight (Marshall, *Braconides d'Europe*, i. 125).

B. fuscicoxis, *Wesm.* Merston, 23rd June, 1907.

B. guttiger, *Wesm.* A ♀ on *Heracleum* flowers at Godshill, 29th June, 1907.

B. satanas, *Wesm.* Marvel Copse, 26th June, 1907.

B. epitriptus, *Marsh.* A ♀ in Havenstreet woods, 28th June, 1907.

B. larvicida, *Wesm.* Swept in Parkhurst Forest, 21st June, 1907.

B. praetermissus, *Marsh.* A ♂ swept with the last.

B. regularis, *Wesm.* A small ♀ in Norton Wood, 20th June, 1907.

B. anthracinus, *Nees.* A ♀ with the last species.

Rhagius exarator, *L.* Taken in Newport, March, 1886 (Morey).

Rhogas circumscriptus, *Nees.* Swept at Sandown Red Cliff, 29th June, 1907.

Sigalphus sp. Bred at Ventnor from capsules of *Iris foetidissima*, among *Mononychus Pseudacori* (Ent. Ann. 1864, p. 114).

Chelonus inanitus, *L.* Swept in Rookley Wilderness (Morey); and at Spring Vale in August.

C. carbonator, *Marsh.* A ♀ taken at Carisbrooke in June.

C. sulcatus, *Nees.* A ♂ swept in Rookley Wilderness, 8th August, 1907 (Morey).

Ascogaster instabilis, *Wesm.* Swept in Havenstreet woods, 28th June, 1907.

A. rufidens, *Wesm.* Swept in Rookley Wilderness, 8th August, 1907 (Morey).

A. bicarinatus, *Sch.* Swept in Marvel Copse, 25th June, 1907.

Apanteles glomeratus, *L.* Bred from *Pieris rapae* at Cowes, 7th January, 1892 (Morley).

A. pallidipes, *Reinh.* Common at Sandown Red Cliff, 23rd and 29th June, 1907.

Microgaster sticticus, *Ruthe.* Ventnor, 29th June, 1907.

Agathis brevisetis, *Nees.* Several ♀♀ swept in Rookley Wilderness, 8th August, 1907 (Morey).

Microdus tumidulus, *Nees.* A ♀ at Calbourne, 26th June, 1907.

Euphorus pallidipes, *Curt.* Calbourne, Norton Wood, and Havenstreet woods, in June.

E. picipes, *Hal.* Norton Wood, 20th June, 1907.

Meteorus ictericus, *Nees.* Taken at Carisbrooke, 26th June, 1907.

Blacus ruficornis, *Nees.* Marvel Copse, 25th June, 1907.

Macrocentrus marginator, *Nees.* One ♀ taken near Newport (Morey); probably common.

M. collaris, *Spin.* A ♀ swept at Shalfleet, 26th June, 1907.

Diospilus morosus, *Reinh.* I. de Wight (*Bracon d'Eur.* ii. 260).

Dolops aculeator, *Marsh.* I. de Wight (*lib. cit.* ii. 270).

Coelinus niger, *Nees.* A ♂ at Norton Wood, 20th June, 1907.

C. gracilis, *Hal.* Swept in Parkhurst Forest, 21st June, 1907.

CYNIPIDAE.

GALL FLIES.

Rhodites eglanteriae, *Htg.* Swept in the Havenstreet woods in June.

Cynips Kollari, *Htg.* Many bred from oak marble galls at Newport (Morey).

Synergus vulgaris, *Htg.* Found in the Havenstreet and Norton woods in June.

S. Reinhardi, *Mayr.* Norton Wood, and bred by Morey from galls of *C. Kollari*.

Andricus radicis, *F.* Swept at Shalfleet in June.

Trigonaspis megaptera, *Panz.* One in Norton Wood in June, 1907.

Neuroterus aprilius, *Gir.* Taken near Newport (Morey).

Rhodites rosae, *Linn.* Galls common on rose-bushes: Ryde golf links, &c.

Euccoela proxima, *Cam.* Shalfleet, and common on flowers at Godshill in June.

E. nigricornis, *Cam.* On flowers of *Heracleum* at Godshill.

E. crassicornis, *Cam.* Godshill, Ningwood, and Havenstreet woods.

Kleditoma nigra, *Htg.* Swept in a field at Newport in May (Morey).

PROCTOTRYPIDAE.

EGG-EATING FLIES.

Proctotrypes niger, *Panz.* Common at Norton, Sandown, and Marvel (C.M.); Rookley (Morey).

P. pallidipes, *Jur.* A ♂ at Rookley early in August, 1907 (Morey).

Ceraphron bispinosus, *Nees.* Parkhurst Forest in early August (Morey).

Trichosteresis scabriventris, *Kief.* Parkhurst Forest in June.

T. Forsteri, *Kief.* I found this at Ryde on 11th August, 1902.

T. armata, *Kief.* Taken in the "Île de Whight" by Marshall (Kieffer).

Bethylus fuscicornis, *Jur.* Swept at Calbourne at the end of June; doubtless common.

Epyris nigra, *Westw.* Recorded by Walker (Venables' Guide).

Gonatopus sepsoides, *Westw.* First taken at Blackgang Chine (Chitty, Ent. Rec. 1907, p. 81).

Antaeon brevifilis, *Kief.* One in nest of *Formica fusca* at Niton in July (*l.c.* 1906, p. 319).

Helorus anomalipes, *Panz.* Taken at Rookley Wilderness in August (Morey).

Platymischus dilatatus, *Westw.* Common at high-water mark, Freshwater Bay (Morey).

Galesus fuscipennis, *Curt.* Rookley Wilderness (Morey); Godshill and Havenstreet woods.

Aneurhynchus nodicornis, *Marsh.* A ♂ in Marvel Copse early in September, 1907 (Morey).

Paramesius rufipes, *Westw.* A ♂ in Parkhurst Forest early in August (Morey).

Diapria conica, *Fab.* Rookley Wilderness in August, 1907 (Morey).

Telenomus Tritia, *Walk.* Recorded by Walker in "Venables' Guide."

Platygaster Crates, *Walk.* Also recorded by its author with the last species.

CHALCIDIDAE.

Many records of Chalcididae, found in the Isle of Wight, are contained in the old "Entomological Magazine" of 1836, &c.; twenty-nine kinds are enumerated in "Venables' Guide"; and Mr.

Morey, Mr. Butler, and I have found others. Unfortunately no one is interested in these brilliant atoms, so I will only say that *Cleonymus depressus* has occurred in Newport in May; *Micromelus pyrrogaster* in Marvel Copse in September; I have swept *Torymus nobilis* and *Megastigmus dorsalis* in Parkhurst Forest, found *Callimone lasioptera* in Norton Wood, and seen *Cheiropachus quadrum* in the burrows of *Scolytus destructor* at Blackwater in June.

SUMMARY OF HYMENOPTERA OBSERVED IN THE I. OF W.

Ants	...	...	15
Solitary wasps	...	...	69
Social wasps	...	...	11
Bees	...	...	114
Rubytail wasps	...	...	5
ACULEATA	...	...	214
SAWFLIES	...	...	48
EVANIIDAE	...	...	1
Ichneumon flies	...	...	24
Cryptid flies	...	...	35
Pimplid flies	...	...	17
Tryphonid flies	...	...	24
Ophionid flies	...	...	8
ICHNEUMONIDAE	...	...	108
BRACONIDAE	...	...	36
GALL FLIES	...	...	12
PROCTOTRYPIDAE	...	...	18
CHALCIDIDAE	...	...	35
TOTAL			472

From the fact that nearly 5000 species have been noticed in the United Kingdom, it will be realized how vast an Order is the Hymenoptera, but our knowledge of the British species is by no means yet complete, and we have to rely very largely upon Continental works for our identification of the more obscure divisions. The Aculeata is the best known, and the student will be able to name his captures by Edward Saunders "Aculeata of the

British Islands," published in 1896, with supplementary species recorded in the "Ent. Month. Mag." by the same author in 1906. Fred. Smith's "Catalogues"—which are much more than mere lists—published by the British Museum Trustees some fifty years ago, contain a great deal of original information upon their habits. But the *fons et origo* of the subject in Britain is old William Kirby's classic "Monographia Apum Angliae," issued at Ipswich in 1802. In a popular way we have Saunders' new "Ants, Wasps, Bees, and other Stinging Insects." Concerning the Chrysididae there are many scattered notes in the magazines; but nothing exhaustive has appeared on the subject with us: the best resumé is by Rev. F. D. Morice in the "Ent. Month. Mag." 1896, p. 116. The extremely difficult Ichneumonidae had been badly neglected till 1903, when the first vol. of Claude Morley's "Ichneumonologia Britannica" appeared; this dealt of the subfamily "Ichneumoninae" and the second vol. of 1907 of the "Cryptinae"; the "Pimplinae" will be published in the autumn of this year, 1908. For the remaining two subfamilies we have nothing but a few useless descriptions in Stephens' "Illustrations" of 1835, and some notes by Bridgman and Fitch in the "Entomologist" of 1884-5. In the Braconidae our knowledge is much fuller, for we have Marshall's "Monograph" upon them in the "Trans. Ent. Soc.," and the same author's very full "Species des Braconides d' Europe." On the very small though beneficial family of the Evaniidae practically nothing has been written since the time of Curtis' "British Entomology"; and the Proctotrypidae are in nearly as bad a plight, from which they would shortly have been raised were it not for Mr. A. J. Chitty's untimely decease last January. No one has dared to touch the Chalcididae since Francis Walker described so many in such an abominable manner that we cannot tell what insects he referred to in the "Ent. Magazine," 1833-38, and later publications. Of the Cynipidae we know something from Cameron's "British Phytophagous Hymenoptera," in which he also treats of our Sawflies; and the latter are just now being brought up to date in the "Ent. Month. Mag." 1903 *et seqq.*, by Rev. F. D. Morice.

COLEOPTERA.

BY E. A. NEWBERY.

THE Coleoptera of the Isle of Wight have been but little studied, it is therefore not surprising that the present list is a very poor one to what might have been expected from an island of such varied geological features and rich flora. The resident collectors of the order have been very few, and scarcely any of these have devoted themselves exclusively to Coleoptera, the more popular order of Lepidoptera having claimed their prior attention. The number of species recorded in the present list is about 1300, but it should not be difficult by diligent work to bring this total up to 2000 species or even more.

The first list of the Isle of Wight species of which we are cognizant, is to be found in a work entitled "The Undercliff of the Isle of Wight," by G. W. Martin, M.D. The list of Coleoptera therein contained numbers about 130 species, some of which are not now admitted as British and not therefore included in the present list.

The next list to appear in point of date was included in "Venables' Guide to the Isle of Wight," published in 1860. This was compiled by Mr. George Guyon; Mr. F. Smith of the British Museum being responsible for the names of the more critical species. As Mr. Smith was one of the best coleopterists of his day, we may assume that they are in the main correctly named, but it must be admitted that some of these earlier records require further confirmation. Like Martin's list above mentioned, this of Guyon was only supposed to include the rarer species, bringing the total recorded to about 160.

The "Victoria History of Hampshire," Vol. 1, published in 1900, although purporting to include the Isle of Wight, ignores the Coleoptera of the Island altogether, not even mentioning such species as *Chlaenius Schranki*, *Baris analis*, or *Cicindela germanica*, the first two of which are peculiar to the Island as far as Britain is concerned, the last not being found in numbers elsewhere. This omission is the more remarkable as Canon Fowler, who assisted in the work, had himself frequently collected in the Island.

In 1906 Mr. H. St. J. Donisthorpe read a paper before the Leicester Literary and Philosophical Society on the Coleoptera of the Isle of Wight, which was afterwards published in a separate form. Like its predecessors it only claimed to be a list of the rarer and more interesting forms, the total here enumerated being under 300 species.

It thus appears that no attempt has hitherto been made to give a complete list of the beetles of the Island.

In compiling the present catalogue the records in the foregoing works have all been made use of, together with the lists of captures which have appeared from time to time in the pages of the "Entomologists' Monthly Magazine," chiefly from the pens of Canon Fowler and Mr. G. C. Champion. To these have been added the results of careful examinations of the collections made by Mr. Frank Morey of Newport, Mr. John Taylor of Sandown, and Mr. Hubert F. Poole of Shanklin, together with lists of captures furnished by Messrs. E. A. Butler, W. Holland, C. Morley, W. E. Sharp and others; lastly Canon Fowler's "British Coleoptera" has given many useful records.

A few particulars of the resident workers in the Island may be of interest. Of Dr. G. A. Martin no information could be gleaned beyond the fact that he practised as a physician in the south of the Island. Mr. George Guyon was born in 1825, and resided for a great many years at Ventnor; his collecting in the Island was confined almost entirely to that town and its environs, and limited to a great extent to the order Coleoptera, of which he made a considerable collection, part of which is now in the writer's possession. He was a friend of Dr. Power, Mr. F. Smith, and other notable coleopterists of his time, was a member of the Entomological Society and was greatly interested in the science until his death, which took place in 1879 at his residence at South Cliff.

At the present time there appears to be but three active workers in the Island. The editor of this volume has for many years past collected in the vicinity of Newport with occasional excursions further afield, and until lately has chiefly paid attention to Coleoptera, of which he has by far the largest and most important collection in the Island. Mr. John Taylor of Sandown, having already the nucleus of a collection made by himself around that town, has, since this present list was projected been most industrious in adding to it, with what success will be evident from the numerous records under his name, which have continued to come in up to the moment of going to press. Mr. Hubert F. Poole has, I believe, devoted most of his time to Lepidoptera, but his collection of beetles—now in Mr. Morey's possession—made in the neighbourhood of Shanklin has afforded many useful records.

Most of the other collecting in the Island has been done during short holidays, taken by various persons, and generally in July and

August. While adding many good species to the list this has not given us the variety and range that would be obtained from collecting all the year round; indeed the deficiency of the species usually taken in winter in moss, dead leaves, and under bark, is very marked.

With regard to the names of the beetles in the succeeding list, it is perhaps as well to say that the present writer is responsible for all those in the collections of Messrs. Elliott, Morey, Poole, and Taylor; he has also examined—by the courtesy of the possessors—the critical species collected by Messrs. Butler, Holland, Morley, and W. E. Sharp. It is necessary to allude here to the exclusion from the list of two insects taken in the Island by a member of the Entomological Society, and exhibited by him at a meeting of that body. One of these insects would, if correctly named, be new to Britain; the other has not been recorded south of the Midlands; both being unlikely species to occur in the Island. An application to be permitted to see and verify these insects was refused. Comment is superfluous.

The beetles peculiar to the Isle of Wight and hitherto not found on the mainland are very few. The most important are *Chlaenius Schranki* and *Baris analis* before referred to. *Bembidium saxatile*, var. *vectensis* has not, I believe, been found elsewhere in Britain, though quite common in the Island. *Cicindela germanica* is still plentiful in its old haunts, although rarely taken out of the Island. Many species rare elsewhere in Britain occur in abundance here, but on the other hand some of our commonest genera and species are not represented in the list at all.

It is remarkable that no record has yet appeared of the capture of any species of *Ilybius* or *Gyrophæna*; but the genus *Harpalus* is well represented, and probably no county in Great Britain can show such a full list, while *Pterostichus* and *Anchomenus* are but poorly represented.

Owing to the desultory method of collecting commonly pursued and the entire absence of records of the commoner species, it is almost impossible at present to say whether many insects abundant on the mainland are equally so in the Island. For this reason localities are given for many common species which in future may only need to be indicated as "common and generally distributed," although at present they have only occurred singly. Most of the recorded captures, except those taken in the Newport district, are from the coast, and it may be presumed that good work in the centre of the Island would largely increase the total.

It will not be necessary here to refer to the Geology of the Island, since it has been ably treated in another part of this work, but a few words on some of the localities which may be expected to yield good species may not be out of place. The marshes west of Yarmouth furnish most of the bog-loving species, as also does the marshy land lying between that place and Freshwater. The sand-hills near St. Helens may be worked very advantageously for the species usually

found in such localities. The chalk downs round the coast and notably those near Freshwater, give excellent results, obtainable not only by sweeping, but also by searching at the roots of the numerous low plants to be found there; while the flints and stones often found on the surface harbour many good Carabidae. Low plants, such as *Sonchus*, growing in the clean sand at Sandown and elsewhere, yield some of the better Curculionidae; while a spot on the coast east of Sandown, where the chalk meets the red sandstone, and locally called "Limpet Run," has furnished some of the best insects taken in the Island. Parkhurst Forest is perhaps the only place where one may expect to find the better Longicornia, Elateridae, and Clavicornia.

In the following pages the arrangement adopted is that of Fowler's "British Coleoptera," for the reason that it is the latest important work which has appeared on the subject, and is in the hands of most students. At the same time in order to bring the synonymy up to the present level of science, the name adopted in the latest European Catalogue (1906) has been added in parentheses, where such name differs from that employed by Canon Fowler. The words "common, generally distributed" must be understood as applying exclusively to the Isle of Wight. The addition of general habitats could not well be given in groups of such diverse habits as the Staphylinidae, Clavicornia, &c., but in the Phytophaga and Curculionidae an attempt has been made to give at least one plant (usually the food plant) on which the species may be expected to occur, this being followed by a dash to separate it from such plants as the specimens cited were actually found upon. The omission of habitats for many species is owing to their not having been supplied by the captors. Precise references to serials, &c., although advantageous, have been omitted in order not to increase the bulk of the list.

The following works may be recommended to the student:—

BRITISH WORKS.

"British Beetles," by E. C. Rye. This work is only useful to the beginner as a general introduction to the subject. "A Handbook of British Coleoptera," by H. E. Cox. 2 vols. 17/6, 1874, Janson. Somewhat out of date, and containing neither localities nor habitats, but a useful work where expense is a consideration. "British Coleoptera," by Canon W. W. Fowler. 5 vols., Edition without plates £4 0s. 0d., 1887—91. Lovell Reeve. This work is also rather behind the present level of the science, but is the best and latest work we have.

FRENCH WORKS.

"Faune de Coléoptères du Bassin de la Seine," par Louis Bedel. Paris, 1891, et seq. A valuable work still in course of publication;

at present only the Adephaga, Phytophaga, and Rhynchophora have appeared. "Faune de France, Coléoptères," par A. Acloque. 1 vol. 6 fr., 1896, with cuts of the genera. Paris, Baillière. A cheap and useful series of tables of the French Coleoptera.

GERMAN WORKS.

"Fauna Transsylvanica," by Dr. G. Seidlitz. 1 vol. 2nd edit., 1891, about 12/-, Königsberg. This excellent work, which is in tabular form, is not, as its name would seem to imply, limited to the region of which it treats, but in many groups includes all the European species. It thus contains not only most of our indigenous species, but many which may be expected to occur in the British Isles. "Die Käfer von Mitteleuropa," by L. Ganglbauer, 1892 et seq. A fine work, still in course of publication; the Adephaga, Staphylinidae, Clavicornia, and Palpicornia being all that have as yet been published.

It remains for me to tender my best thanks to the following gentlemen, without whose valuable assistance the work could not have been undertaken: Messrs. E. A. Butler, E. A. Elliott, W. Holland, F. Morey, C. Morley, H. F. Poole, W. E. Sharp, and J. Taylor.

The following abbreviations are used in the text:—

Beare	denotes	Beare, T. Hudson.
Butler	"	Butler, E. A.
Champion	"	Champion, G. C.
Donisthorpe	"	Donisthorpe, H. St. J.
Elliott	"	Elliott, E. A.
Ellis	"	Ellis, J. W.
E. M. M.	"	"Entomologists' Monthly Magazine."
Ent. Rec.	"	"Entomological Record."
Fowler	"	Fowler, W. W.
Fowler, B. C.	"	"British Coleoptera," by Canon Fowler.
Gorham	"	Gorham, Rev. H. S.
Guyon	"	Guyon, G. (In Venables' "Guide to the Isle of Wight").
Holland	"	Holland, W.
Martin	"	Martin, G. A. (In "The Undercliff of the Isle of Wight").
Morey	"	Morey, F.
Morley	"	Morley, C.
Newbery	"	Newbery, E. A.
Poole	"	Poole, H. F.
Sharp	"	Sharp, W. E.
Taylor	"	Taylor, J.

ADEPHAGA

CICINDELIDAE

Cicindela campestris, *L.* On sandy heaths, not uncommon: Shanklin, Sandown, Bembridge, Ventnor, St. Boniface Down. May and June.

C. germanica, *L.* Foot of cliffs amongst coarse grass: not uncommon at Blackgang Chine. June and July. Chale (Champion).

CARABIDAE

Cychrus rostratus, *L.* By grubbing at foot of cliffs, Sandown, in Aug. (Newbery); beneath stone, the Landslip, in July—"made squeaking noise when caught" (Morey).

Carabus nemoralis, *Müll.* Parkhurst Forest (Morey); St. Helens (Holland); near Sandown (Taylor).

C. violaceus, *L.* In garden, Newport, May and Aug.; also beneath stone, Brading (Morey); near Sandown (Taylor).

C. granulatus, *L.* Near Sandown (Taylor).

Calosoma sycophanta, *L.* Bonchurch (Guyon). Not really an indigenous species.

Notiophilus aquaticus, *L.* Roots of herbage on cliffs: Alum Bay, Aug. (Newbery); Shanklin (Holland).

N. biguttatus, *F.* Common and gen. dist.

N. substriatus, *Wat.* St. Helens (Holland); Ryde (Morey).

N. palustris, *Duft.* Roots at foot of cliffs, Sandown, Luccombe, &c., Aug. (Newbery); Marvel Copse, near Newport, June; also Ventnor, July (Morey).

Leistus spinibarbis, *F.* Common and gen. dist.

L. fulvibarbis, *Dej.* Rather common: Shanklin, Newport, &c.

L. ferrugineus, *L.* Marvel Copse, June (Morey); Ryde (Holland).

Nebria brevicollis, *F.* Common and gen. dist.

Elaphrus cupreus, *Duft.* Marshy ground near Carisbrooke, May (Morey).

Loricera pilicornis, *F.* In field, Newport, Aug.; also beneath stone, Carisbrooke (Morey); near Sandown (Taylor); Bembridge (Holland).

Clivina fossor, *L.* Bembridge (Holland).

Dyschirius thoracicus, *Rossi* (*arenosus*, *Steph.*). Muddy deposits at base of cliffs near Shanklin, Aug. (Newbery).

D. salinus, *Schaum.* St. Helens (Holland).

D. aeneus, *Dej.* Rather common: Luccombe, Totland, Shanklin, &c.

D. globosus, *Hbst.* One specimen, Bordwood Copse, near Sandown (Taylor).

Broscus cephalotes, *L.* Common on the coast under marine rejectamenta, &c.

Panagæus crux-major, *L.* Roots of herbage, Totland, Aug. (Butler); Newport (Morey).

P. quadripustulatus, *Sturm* (bipustulatus, *F.*). Near Sandown (Guyon, & Fowler, B.C.).

Badister bipustulatus, *F.* Rather common in sandy banks, &c.: Newport, Freshwater, St. Helens, Sandown, &c.

B. sodalis, *Duft.* In moss, Shanklin (Guyon); Sandown (Ellis); St. Helens (Holland).

B. peltatus, *Pz.* I. of Wight (Gorham).

Licinus silphoides, *F.* (granulatus, *Dej.*). Common under stones at Blackgang (Donisthorpe).

Chlaenius vestitus, *Pk.* At foot of cliffs, Shanklin; also at Luccombe in damp places (Morey); Shanklin (Holland).

C. Schranki, *Duft.* (nitidulus, *Schrank*). Very rare, and hitherto has only been found at Luccombe Chine, where it has been taken by F. Bates, G. Lewis, W. W. Fowler and others in early spring. There are no recent records.

C. nigricornis, *F.* Brading (Holland).

Stenolophus teutonus, *Schrank.* Common at Sandown at roots of *Juncus* at foot of the cliffs, July (Champion); Luccombe Chine (Fowler, B.C.); St. Helens (Holland).

S. Scrimshiranus, *Steph.* Near the fort, Sandown (Taylor); Castle Cove, Niton (Guyon); Niton (Fowler, B.C.).

Acupalpus flavicollis, *Sturm.* Common at Sandown at roots of *Juncus*, July (Champion); Sandown (Beare); Alverstone (Ellis); St. Helens (Holland); near Luccombe, in the spring (Guyon).

A. dorsalis, *F.* St. Helens (Holland).

A. exiguus, *Dej.* Side of pond, Heytesbury Farm, near Parkhurst, Aug. (Butler); St. Helens (Holland); Sandown (Taylor); Luccombe (Guyon).

A. luridus, *Dej.* Sides of pond, Heytesbury Farm, Aug. (Butler); Blackgang (Holland); near Shanklin (Taylor).

A. meridianus, *L.* Not uncommon: Newport, Sandown, Luccombe, St. Helens, &c.

Bradycellus distinctus, *Dej.* St. Helens (Holland).

B. verbasci, *Duft.* By sweeping, Luccombe, Aug. (Newbery); St. Helens (Holland); near Sandown (Taylor).

B. harpalinus, *Dej.* Newport (Morey); Chale (Sharp); Sandown (Holland).

B. similis, *Dej.* (Tetraplatypus similis, *Dej.*). Moss, St. Boniface Down (Martin); near Sandown (Taylor).

Ophonus sabulicola, *Panz.* Under stones in dry ditch in field near Freshwater, Aug. (Newbery).

O. rotundicollis, *Fair.* (diffinis, *Dej. var. rotundicollis*, *Fair.*). Common on chalky soil and gen. dist.

O. punctatulus, *Duft.* Beneath stone in sand-pit, Ventnor, July; also in sand-pit, Marvel Copse, June (Morey); Sandown and Ventnor (Guyon).

O. azureus, *F.* Under flints on High Down, Freshwater, Aug. (Newbery); beneath stone in garden, Ventnor, June (Morey).

O. cordatus, *Duft.* Under flints on High Down, Freshwater, Aug. (Newbery); Sandown (Holland).

O. rupicola, *Sturm.* Under stones in dry ditch in field near Freshwater, Aug. (Newbery); Sandown (Holland).

O. puncticollis, *Payk.* Rather common under stones: Ventnor, St. Helens, Yarmouth, St. George's Down, &c. Very common on heads of Umbelliferae, Niton (Sharp).

O. rufibarbis, *F. (brevicollis, Serv.)*. Roots at foot of cliffs, Sandown, Aug. (Newbery); beneath stone in garden, Ventnor, June (Morey); Sandown (Holland).

O. parallelus, *Dej. (brevicollis, Serv. var. parallelus, Dej.)*. Sandown (Fowler); Niton (Sharp); Sandown (Holland). Doubtfully distinct from the last species.

O. ruficornis, *F. (pubescens, Müll.)*. Common.

Harpalus aeneus, *F.* Common.

H. consentaneus, *Dej. (attenuatus, Steph.)*. Sandown and Brook (Donisthorpe's List); sand-pit, Marvel Copse (Morey); Luccombe (Guyon); St. Helens (Holland).

H. tenebrosus, *Dej.* Several specimens at Sandown (Donisthorpe); Ventnor (Ellis); Freshwater (Holland); a single example at base of sandy cliffs, Sandown, July (Champion).

H. rubripes, *Duft.* Common.

H. discoideus, *F. (smaragdinus, Duft.)*. "Sandy places" (Guyon). This is possibly an error, as there is no more recent record.

H. cupreus, *Dej.* Plentiful under stones on margin of a corn-field, Sandown, July (Champion); Bembridge (Ellis); Ryde and Cowes (Fowler, B.C.). A very rare and local insect, which appears to be confined to the Isle of Wight.

H. caspius, *Stev. (dimidiatus, Rossi)*. Not uncommon under stones in the south: Sandown, Freshwater, Ventnor, Bonchurch, &c.

H. latus, *L.* Near Sandown (Taylor); in road, Newport, May (Morey).

H. melancholicus, *Dej.* In some numbers, St. Helens (Holland).

H. tardus, *Panz.* St. Helens and Sandown (Holland); Sandown (Taylor).

H. anxius, *Duft.* St. Helens (Holland).

H. serripes, *Schon.* Sandown (Champion & Holland).

H. ignavus, *Duft. (rufitarsis, Duft.)*. Beneath stone, St. George's Down, March (Morey); St. Helens (Holland).

H. neglectus, *Serv.* Freshwater (Holland).

Dichrotrichus obsoletus, *Dej.* Plentiful beneath small stones on rough land—site of the old harbour—near Brading, Sept. (Morey); St. Helens (Holland).

D. pubescens, *Payk.* St. Helens (Holland); Sandown (Taylor).

Anisodactylus binotatus, *F.* Bembridge (Donisthorpe); Sandown (Holland).

A. binotatus *var. spurcaticornis*, *Dej.* Bembridge (Donisthorpe).

A. poeciloides, *Steph.* Under stones near Bembridge (Beare, Donisthorpe, Ellis, &c.); St. Helens (Holland).

Zabrus gibbus, *F.* (*tenebrioides*, *Goeze*). Sandown and St. Helens (Holland); Sandown (Newbery, Donisthorpe, & Taylor); Freshwater (Donisthorpe).

Stomis pumicatus, *Panz.* Bembridge (Holland); near Shanklin (Poole).

Pterostichus cupreus, *L.* Rather common in spring: Parkhurst, Sandown, St. Helens, Newport, &c.

P. madidus, *F.* Rather common in gardens and roads, and gen. dist.

P. niger, *Schall.* Top of cliffs near Luccombe (Holland).

P. vulgaris, *L.* In Prof. Poulton's garden, St. Helens (Holland).

P. anthracinus, *Ill.* St. Helens (Holland).

P. nigrita, *F.* St. Helens (Holland).

P. strenuus, *Panz.* Near Shanklin (Poole); Bembridge (Holland).

P. diligens, *Sturm.* Near Shanklin (Poole); Sandown (Taylor).

P. picimanus, *Duft.* (*macer*, *Marsh.*). One specimen near Ventnor, April (Dr. D. Sharp); under stones, Steephill Cove (Guyon).

P. inaequalis, *Marsh.* Under isolated stones in ditch, border of an arable field near Freshwater in some numbers, Aug. (Newbery); Bembridge and Sandown (Taylor); Ryde (Holland); Bembridge and Freshwater (Donisthorpe's List).

P. vernalis, *Panz.* Bembridge (Donisthorpe); St. Helens (Holland); near Sandown (Taylor).

P. striola, *F.* (*Abax ater*, *Vill.*). Common in garden among vegetable refuse, &c., Newport; also under stone, Ventnor, May (Morey).

Amara fulva, *De G.* Abundant under stones near Ryde (Guyon); St. Helens (Holland); Sandown (Beare).

A. apricaria, *Payk.* By grubbing at foot of cliffs, Sandown, Aug. (Newbery); sand-pit, Marvel Copse, April (Morey); St. Helens (Holland).

A. aulica, *Panz.* By grubbing at foot of cliffs, Sandown, Aug. (Newbery & Holland).

A. convexiuscula, *Marsh.* St. Helens (Holland); under stones, Ryde (Guyon).

A. rufocincta, *Sahl.* Freshwater (Fowler, B.C.); Sandown, Sept. (Beare); Sandown (Sharp).

A. livida, *F.* (*bifrons*, *Gyll.*). By grubbing at roots of herbage at foot of cliffs, Sandown, Aug. (Newbery); St. Helens (Holland).

A. ovata, *F.* Ventnor, July (Morey); Shanklin (Holland & Poole); Marshcombe Copse, near Sandown, May (Taylor).

A. similata, *Gyll.* Common on paths, Ventnor, &c. (Guyon); St. Helens (Holland).

A. tibialis, *Payk.* St. Helens (Holland).

A. lunicollis, *Schiodt.* Sandown and Chale (Champion); St. Helens (Holland).

A. spreta, *Dej.* Sandown, May (Beare & Donisthorpe).

A. familiaris, *Duft.* Sand-pit, Marvel Copse, April and June (Morey); St. Helens (Holland).

A. lucida, *Duft.* St. Helens (Holland); "sandy places" (Guyon).

A. trivialis, *Gyll.* (*aenea*, *De G.*). Common: St. Helens, Newport, Ventnor, Shanklin, &c.

A. communis, *Panz.* St. Helens (Holland).

A. strenua, *Zimm.* Formerly common in the salt marshes near Ryde. Has not occurred for many years.

A. plebeia, *Gyll.* On ground, Marvel Copse, May; also in timber yard, Newport, June (Morey).

Calathus cisteloides, *Panz.* (*fuscipes*, *Goeze*). Common.

C. flavipes, *Four.* (*erratus*, *Sahl.*). St. Helens (Holland).

C. mollis, *Marsh.* St. Helens (Holland & Taylor).

C. melanocephalus, *L.* Common: Newport, Ventnor, Freshwater, St. Helens, Shanklin.

C. piceus, *Marsh.* Near Sandown (Taylor); St. Helens (Holland).

Taphria nivalis, *Panz.* (*Synuchus nivalis*, *Panz.*). In roads towards evening, Sandown, July (Champion); in house, Newport, July (Morey); Bembridge (Donisthorpe).

Pristonychus terricola, *Herbst.* Near Sandown (Taylor); St. Helens (Holland).

Sphodrus leucophthalmus, *L.* In house, Ryde (Taylor); amongst corn in a shop, Newport, Aug. (Morey).

Anchomenus juncus, *Scop.* (*assimile*, *Payk.*). Very common in fallen oak branches, Whitefield Woods, April (Taylor).

A. dorsalis, *Müll.* Common near Newport beneath stones, clods of earth, &c. (Morey); near Sandown (Taylor); Shanklin (Poole).

A. albipes, *F.* Very common and gen. dist.

A. oblongus, *F.* (*Agonum ruficorne*, *Goeze*). Sandown (Taylor); marshy places, Ryde and Luccombe (Guyon).

A. marginatus, *L.* St. Helens (Holland); Whitwell (Martin).

A. parumpunctatus, *F.* (*Mülleri*, *Herbst.*). Sand-pit, Marvel Copse, April (Morey); St. Helens (Holland); near Sandown (Taylor).

A. viduus, *Panz.* Margin of pond, Heytesbury Farm, April (Morey).

A. viduus *var. moestus*, *Duft.* One specimen in brick-field near Sandown, May (Taylor).

A. fuliginosus, *Panz.* Near Shanklin (Poole); Sandown (Taylor).

Olisthopus rotundatus, *Payk.* At roots of plants, Totland Bay (Newbery); Bembridge (Donisthorpe).

Tachys scutellaris, *Germ.* On a mud-flat, Bembridge (Beare & Donisthorpe); St. Helens (Holland).

Lymnaeum nigropiceum, *Marsh.* In shingle, small bay west of

Ventnor (Beare & Donisthorpe); Steephill Cove, under seaweed (Guyon); coast near Quarr Abbey (Newbery); Ventnor, in plenty (Fowler).

Cillenius lateralis, *Sam.* Burrowing in sand and under seaweed, Bembridge (Guyon).

Bembidium rufescens, *Guer.* (*harpaloides*, *Serv.*). Common both inland and on the coast: Totland, Alum Bay, Newport, Shanklin, Ventnor, &c.

B. quinquestriatum, *Gyll.* On walls, Bembridge (Ellis); Sandown (Champion); sandy places near Luccombe (Guyon).

B. obtusum, *Sturm.* Beneath clods of earth, Shide, Oct.; also in house, Newport, Feb. (Morey); near Sandown (Taylor).

B. guttula, *F.* By sweeping, Bembridge, June (Morey); St. Helens (Holland); Sandown (Taylor).

B. Mannerheimi, *Sahl.* Muddy deposit, foot of cliffs, Shanklin, Aug. (Newbery).

B. biguttatum, *F.* Bembridge (Holland); Ryde (Guyon); Sandown (Taylor).

B. lunulatum, *Four.* Common and gen. dist.: Gurnard Bay, Fairlee near Newport, Parkhurst, Combley Wood, Brading, Yarmouth, &c.

B. iricolor, *Bed.* Ryde (Guyon)—named from specimens in my possession (E.A.N.).

B. assimile, *Gyll.* Near Yarmouth, April (Gorham).

B. Sturmi, *Panz.* A single specimen of this rare insect taken in wet shingle, Luccombe, July (Champion).

B. minimum, *F.* St. Helens (Holland).

B. normannum, *Dej.* Salt marsh, Yarmouth, Aug. (Butler); St. Helens (Holland).

B. lampros, *Hbst.* Common and gen. dist.

B. nitidulum, *Marsh.* Alum and Totland Bays, Aug. (Newbery); Alum Bay, Aug. (Butler); in a sand-pit, Marvel Copse, June (Morey).

B. affine, *Steph.* (*Stephensi*, *Crotch.*). Marshy places on cliffs, Totland and Alum Bays and Sandown, Aug. (Newbery); beneath stone on the shore, Ventnor, June (Morey).

B. quadriguttatum, *F.* Luccombe, April (Fowler); Blackgang, Sandown, and Brook (Donisthorpe); St. Helens (Holland).

B. quadrimaculatum, *L.* Shanklin (Newbery).

B. femoratum, *Sturm* (*Andreae*, *F. var. femoratum*, *Sturm.*). Wet place at foot of cliffs, Shanklin, Aug. (Morey).

B. saxatile, *Gyll. var. vectensis*, *Fowler.* Generally distributed on the south coast.

B. anglicanum, *Sharp* (*Andreae*, *F. var. Bualei*, *Duv.*). Abundant at Blackgang Chine, Oct. (Donisthorpe); Shanklin (Holland).

B. littorale, *Ol.* (*ustulatum*, *L.*). Very common and gen. dist.

B. pallidipenne, *Ill.* "By sluicing" banks of stream, Brook (Donisthorpe & Holland).

B. ephippium, *Marsh.* St. Helens (Holland).

B. varium, *Ol.* St. Helens (Holland).

Tachypus flavipes, *L.* Running quickly in timber yard, Newport, Oct. (Morey); on a damp spot amongst scantily growing rushes, Totland, Aug. (Butler).

Aepus marinus, *Strom.* Amongst shingle below high-water mark, Luccombe and Ventnor (Fowler); Sandown (Champion); coast near Quarr Abbey (Morley, Dr. Capron, &c.).

A. Robini, *Laboul.* Same habits as the last species. Sandown (Champion); near Quarr Abbey (Dr. Capron); Ventnor (Fowler, B. C.).

Trechus lapidosus, *Daws.* Under large stones west of Ventnor, April (Fowler); under stone at foot of cliff a mile east of Sandown (Taylor); Ventnor and Steephill (Guyon).

T. minutus, *F.* (*quadristriatus*, *Schrank*). Common and gen. dist. A curious pale form under seaweed near Quarr Abbey (Newbery).

T. minutus *var obtusus*, *Er.* Nettlestone (Morley); Shanklin (Holland).

Pogonus luridipennis, *Germ.* Amongst coarse grass, Bembridge (Ellis).

P. littoralis, *Duft.* Salt marshes, Sandown (Champion).

P. chaldeus, *Marsh.* Beneath stone on shore, Gurnard Bay, June (Morey); on mud, Ryde (Guyon); St. Helens (Holland).

Cymindis axillaris, *F.* Not uncommon under flints, top of High Down, Freshwater, Aug. (Newbery).

Demetrius atricapillus, *L.* Common and gen. dist.

Dromius linearis, *Ol.* Common and gen. dist.

D. meridionalis, *Dej.* In sand-pit, Marvel Copse, March; also in timber yard, Newport, April (Morey); near Shanklin (Poole).

D. quadrimaculatus, *L.* Ryde (Morley); Freshwater (Holland).

D. quadrinotatus, *Panz.* Shanklin (Poole).

D. melanocephalus, *Dej.* Under *Sonchus*, &c., in gravel-pit, Shide, Oct. (Newbery); Sandown (Taylor).

D. sigma, *Rossi.* Steephill Cove (Guyon).

The insect here recorded must be referred to *D. vectensis*, Rye.

D. vectensis, *Rye.* Not uncommon and gen. dist. in the south of the Island.

Blechnus maurus, *Sturm.* Rather common and gen. dist.

Metabletus foveola, *Gyll.* (*foveatus*, *Geoffr.*). In sand-pit, Marvel Copse, June; also at Ventnor, July (Morey); St. Helens (Holland).

M. obscuroguttatus, *Duft.* Rather common and gen. dist.

Polystichus vittatus, *Brull.* (*connexus*, *Geoffr.*). Sandown, April (Guyon); Newport (Poole).

Drypta dentata, *Rossi.* One specimen by sweeping on low cliffs between Sandown and Culver, Aug. (Butler); roots of grass, &c., Luccombe and Freshwater (Fowler); Luccombe (Guyon).

Brachinus crepitans, *L.* Frequent beneath stones in quarries,

gardens, &c., Ventnor (Morey); Whitecliff (Holland); Freshwater, Aug. (Newbery).

HALIPLIDAE

Haliplus obliquus, *F.* Ditches by the Yar, Brading, Aug. (Butler); pond, Heytesbury Farm, Oct. (Morey).

H. confinis, *Steph.* A single specimen in pond in brick-fields near waterworks, Sandown (Taylor).

H. flavicollis, *Sturm.* Ditches by the Yar, Brading, Aug. (Butler); pond, Heytesbury Farm, April (Morey).

H. fulvus, *F.* Pond, Heytesbury Farm, April (Morey).

H. cinereus, *Aubé* (*laminatus*, *Schall.*). Pond, Heytesbury Farm, April (Morey).

H. ruficollis, *De G.* Rather common: pond, Heytesbury Farm, April (Morey); ditches by the Yar, Brading, Aug. (Butler).

H. immaculatus, *Gerh.* Ditches by the Yar, Brading, Aug. (Butler); marshes near Sandown Fort (Taylor).

H. fluviatilis, *Aubé.* Ditches by the Yar, Brading, Aug. (Butler); marshes near Sandown Fort (Taylor).

H. lineatocollis, *Marsh.* Common: Parkhurst, St. Helens, Brading, &c.

Cnemidotus impressus, *F.* Sandown (Donisthorpe, Taylor, Beare, & Holland).

HYGROBIIDAE

Pelobius tardus, *Herbst* (*Hygrobia tarda*, *Herbst*). Pond, Heytesbury Farm, one specimen (Morey); pond in brick-fields, Sandown (Taylor).

DYTISCIDAE

Noterus clavicornis, *De G.* (*crassicornis*, *Müll.*). Sandown (Holland).

N. sparsus, *Marsh.* (*clavicornis*, *De G.*). Rather common: pond, Heytesbury Farm, April (Morey); Sandown (Holland & Taylor); Nettlestone (Morley).

Laccophilus interruptus, *Panz.* (*virescens*, *Brahm*). Pond, Heytesbury Farm (Morey); Brading (Butler); Sandown (Holland & Taylor).

L. obscurus, *Panz.* Common: pond, Heytesbury Farm (Morey); Brading (Butler); Nettlestone (Morley); Sandown (Holland).

Hydrovatus clypealis, *Sharp* (*Oxynoptilus clypealis*, *Sharp*). Pond, Sandown (Beare, Donisthorpe, & Ellis).

Hyphydrus ovatus, *L.* Common in pond at Heytesbury Farm (Morey); St. Helens (Holland); Sandown (Taylor).

Coelambus inaequalis, *F.* (*Hygrotus inaequalis*, *F.*). Common and gen. dist.

- C. parallelogrammus**, *Ahr.* Sandown (Holland).
Hydroporus pictus, *F.* In profusion in pond, Heytesbury Farm, Oct. (Newbery); the Yar, Brading, Aug. (Butler).
H. lineatus, *De G.* Near Yarbridge (Holland).
H. tristis, *Payk.* Pond, Heytesbury Farm (Morey).
H. angustatus, *Sturm.* Pond, Heytesbury Farm, Oct. (Morey & Newbery).
H. palustris, *L.* Very common.
H. erythrocephalus, *L.* The Yar, Brading, Aug. (Butler); marshes near Sandown Fort (Taylor).
H. obscurus, *Sturm.* Sandown (Holland).
H. memnonius, *Nic.* One specimen, marshes near Sandown Fort, May (Taylor).
H. nigrita, *F.* Rather common at Luccombe Chine, July (Champion).
H. discretus, *Fair.* The Yar, Brading, Aug. (Butler).
H. pubescens, *Gyll.* Sandown (Holland).
H. planus, *F.* Common and gen. dist.: Shanklin, Nettlestone, Ryde, Sandown, &c.
H. lituratus, *Brullé* (*tessellatus*, *Drap.*). Pond, Heytesbury Farm, Oct. (Newbery); Nettlestone (Morley); St. Helens (Holland).
Agabus guttatus, *Payk.* Pond near Brading (Taylor).
A. paludosus, *F.* Ditches by the Yar, Aug. (Butler); small stream, Rookley Wilderness, Sept. (Morey).
A. didymus, *Ol.* Pond, Heytesbury Farm (Morey).
A. nebulosus, *Forst.* In profusion under an old sack, dried-up pond, Shide, Oct. (Newbery); pond, Heytesbury Farm (Morey).
A. conspersus, *Marsh.* Sandown (Holland).
A. bipustulatus, *L.* Very common.
Copelatus agilis, *F.* Marshes near Sandown Fort, May (Taylor).
Rhantus pulverosus, *Steph.* (*punctatus*, *Geoffr.*). Newport (Morey).
Colymbetes fuscus, *L.* One specimen in pond, Heytesbury Farm (Morey); Bembridge (Holland); Sandown (Taylor).
Dytiscus marginalis, *L.* Pond, Heytesbury Farm; also in sluggish stream near Newport (Morey).
D. punctulatus, *F.* Pond, Heytesbury Farm, April (Morey).
Acilus sulcatus, *L.* Pond, Heytesbury Farm (Morey).

GYRINIDAE

- Gyrinus urinator**, *Ill.* Pond at St. Lawrence, not uncommon (Guyon).
G. natator, *Scop.* Pond at Brading; also in stream near Newport (Morey); Brading, Aug. (Butler).
G. opacus, *Sahl.* (*marinus*, *Gyll. var. opacus*, *Sahl.*). Ryde (Holland).

CLAVICORNIA

HYDROPHILIDAE

Hydrobius fuscipes, *L.* Pond, Heytesbury Farm, Oct. (Morey).

H. fuscipes var. **picicrus**, *Thoms.* (var. *subrotundatus*, *Steph.*). Taken with the type form.

Philhydrus maritimus, *Thoms.* (bicolor, *F.*). Brackish ditches, Bembridge (Ellis); St. Helens (Holland).

P. nigricans, *Zett.* One specimen in pond near waterworks, Sandown (Taylor).

P. coarctatus, *Gredl.* Pond, Heytesbury Farm, April (Morey); pond near Station, Sandown, May (Taylor).

Cymbiodyta ovalis, *Thoms.* (marginella, *F.*). Pond, Heytesbury Farm, Oct. (Newbery).

Anacaena globulus, *Payk.* Small stream, Luccombe Chine, Oct. (Morey); Sandown (Donisthorpe & Taylor).

A. limbata, *F.* Very common: Parkhurst, Brading, Sandown, &c.

A. bipustulata, *Steph.* One specimen, marshes near Sandown Fort (Taylor).

Helochares lividus, *Forst.* Common: pond, Heytesbury Farm (Morey & Newbery); Nettlestone (Morley); Yarmouth (Butler); St. Helens (Holland); Sandown (Taylor).

Laccobius nigriceps, *Thoms.* Plentiful in pond at Heytesbury Farm (Morey); pond, Totland, Aug. (Butler).

L. alutaceus, *Thoms.* Pond, Heytesbury Farm, Oct. (Newbery); the Yar, Brading, Aug. (Butler); Sandown (Taylor).

L. minutus, *L.* The Yar, Brading, Aug. (Butler).

L. bipunctatus, *F.* (biguttatus, *Gerh.*). Pond, Heytesbury Farm, April (Morey); Nettlestone (Morley).

Berosus luridus, *L.* Sandown (Holland).

Limnebius truncatellus, *Thun.* Common and gen. dist.

L. nitidus, *Marsh.* The Yar, Brading, Aug. (Butler).

Chetarthria seminulum, *Herbst.* Recorded by Guyon without locality; Sandown (Donisthorpe).

Helophorus rugosus, *Ol.* (rufipes, *Bosc.*). Sandown (Sharp).

H. nubilus, *F.* Chale (Sharp).

H. aquaticus, *L.* Common and gen. dist.

H. aquaticus var. **aequalis**, *Thoms.* Pond, Heytesbury Farm, Oct. (Morey & Newbery); Sandown (Taylor).

H. aeneipennis, *Thoms.* (viridicollis, *Steph.*). Pond, Heytesbury Farm, April (Morey); Nettlestone (Morley); St. Helens (Holland).

H. Mulsanti, *Rye.* St. Helens (Holland).

H. affinis, *Marsh.* The Yar, Brading, Aug. (Butler); Nettlestone (Morley); Sandown (Taylor).

H. brevipálpis, *Bed.* Very common and gen. dist.

Ochthebius viridis, *Peyr.* One specimen in pond at Heytesbury

Farm, Oct. (Newbery); one specimen in ditch in marshes near the sea, Spring Vale, March (Morley).

O. margipallens, *Lat.* Bembridge (Donisthorpe).

This should possibly be referred to *O. viridis*, *Peyr.*

O. marinus, *Payk.* Bembridge (Donisthorpe).

O. aeneus, *Steph.* I. of Wight (Blatch).

O. pygmaeus, *F.* (*impressus*, *Marsh.*). Pond, Heytesbury Farm, April and Oct. (Morey & Newbery).

O. rufimarginatus, *Steph.* (*bicolon*, *Germ.*). Rarely, at Luccombe, July (Champion); dried watercourse, Combley Wood, Aug. (Butler).

O. auriculatus, *Rey.* Salt marsh, Yarmouth (Donisthorpe).

O. nanus, *Steph.* Ditches by the Yar, Brading, Aug. (Butler); Bembridge (Donisthorpe).

O. punctatus, *Steph.* Bembridge (Donisthorpe).

Hydraena testacea, *Curt.* Pond, Heytesbury Farm, May (Morey).

H. riparia, *Kug.* Pond, Heytesbury Farm, Oct. (Newbery).

H. nigrita, *Germ.* Luccombe (Champion).

Sphaeridium scarabaeoides, *L.* In cow-dung, the Landslip, July; also on Pan Down, May (Morey).

S. bipustulatum, *F.* On a road, June; also in timber yard, April and July (Morey).

S. bipustulatum *var. marginatum*, *F.* Bembridge (Holland).

Cercyon littoralis, *Gyll.* Under seaweed, common and gen. dist. Varies extremely in colour and marking.

C. depressus, *Steph.* Under seaweed, common and gen. dist.

C. haemorrhoidalis, *Herbst* (*impressus*, *Sturm.*). Sandown (Holland).

C. obsoletus, *Gyll.* (*lugubris*, *Ol.*). Freshwater and Sandown (Holland); I. of Wight, locality not noted (Morey).

C. flavipes, *F.* (*haemorrhoidalis*, *F.*). In horse-dung, St. George's Down, June (Morey); St. Helens and Ryde (Holland); Niton (Donisthorpe).

C. lateralis, *Marsh.* Sandown (Holland).

C. melanocephalus, *L.* In dung, Pan Down (Morey); near Sandown (Taylor).

C. unipunctatus, *L.* In cucumber frame, May; also in house, Newport (Morey).

C. nigriceps, *Marsh.* By sweeping in field, Newport, July (Morey).

C. pygmaeus, *Ill.* By grubbing at roots, foot of cliffs, Sandown, Aug. (Newbery).

C. analis, *Payk.* (*flavipes*, *Thun.*). Common amongst garden refuse, Newport, Aug. (Morey); Sandown, April (Taylor).

Megasternum boletophagum, *Marsh.* In fungus, Marvel Copse (Morey); Newport (Butler); Sandown (Holland).

Cryptopleurum atomarium, *Ol.* (*minutum*, *F.*). In horse-dung,

Pan Down, June; also by sweeping, Brading, June (Morey); near Sandown (Taylor).

STAPHYLINIDAE

Aleochara fuscipes, *F.* (*curtula*, *Goeze*). Under carrion, rather common: Newport, Blackgang, Yarmouth, Gurnard, &c.

A. lata, *Gr.* In and under dead animals, rather common: Cowes, Chale, Brook, Niton, Sandown, Parkhurst, &c.

A. tristis, *Gr.* Heytesbury Farm, Aug. (Butler).

A. bipunctata, *Ol.* (*intricata*, *Mann.*). Ventnor, July (Morey); Barnes, near Brighstone, June (Taylor).

A. lanuginosa, *Gr.* In dung, Pan Down, April; also in timber yard, June (Morey); Sandown (Taylor).

A. moesta, *Gr.* Ventnor, April (Fowler).

This record probably refers to *A. succicola*, *Thoms.* (*sparsa*, *Heer*) with which *A. moesta* was formerly mixed in British collections.

A. succicola, *Thoms.* (*sparsa*, *Heer*). In dead fowl, Newport, July (Morey).

A. nitida, *Gr.* (*bipustulata*, *L.*). By sweeping, Marvel Copse, June (Morey).

A. morion, *Gr.* (*Exaleochara morion*, *Gr.*). Heytesbury Farm, Aug. (Butler).

A. grisea, *Kr.* Rather common under seaweed.

A. algarum, *Fauv.* Common under seaweed.

A. obscurella, *Gr.* Under dead fish, Sandown beach, May (Taylor).

Microglossa suturalis, *Mann.* (*Crataraea suturalis*, *Mann.*). Near Shanklin (Poole).

M. pulla, *Gyll.* I. of Wight (Fowler, B.C.).

M. nidicola, *Fair.* Freshwater (Holland).

Oxypoda opaca, *Gr.* Garden refuse, Oct. (Morey).

O. alternans, *Gr.* In fungus, Marvel Copse, Oct. and Nov. (Morey); Ventnor (Fowler).

O. nigrina, *Wat.* (*sericea*, *Heer*). In garden refuse, Oct. (Morey).

O. haemorrhoea, *Mann.* Rather common in tree fungus, Marvel Copse, Oct. (Morey & Newbery); Sandown (Taylor).

Ilyobates nigricollis, *Payk.* One specimen on the beach, Sandown (Champion); Parkhurst Forest (Fowler, B.C.).

Chilopora longitarsis, *Steph.* Whale Chine, near Atherfield, June (Taylor).

Atemeles emarginatus, *Payk.* One specimen by sweeping *Eupatorium*, Luccombe, Aug. (Butler); one specimen, Bonchurch, July (Champion); Parkhurst Forest, April (Morey).

A. paradoxus, *Gr.* On cliffs between Sandown and Brading (Fowler); ants' nest, Bonchurch (Martin).

Myrmedonia limbata, *Payk.* (*Zyras limbatus*, *Payk.*). In nests of *Formica*, Sandown and Ventnor (Champion).

M. laticollis, *Märk.* (*Zyras laticollis*, *Märk.*). In some numbers by placing grass in a tree inhabited by *Formica fuliginosa*, top of Luccombe Chine (Fowler, B.C.).

Astilbus canaliculatus, *F.* In dung, the Landslip, July; also in sand-pit, Marvel Copse, June (Morey); Ryde (Morley).

Callicerus obscurus, *Gr.* On stones, near running water, Luccombe Chine, May (Morey).

Alianta plumbea, *Wat.* (*Heterota plumbea*, *Wat.*). Under seaweed in numbers, Ventnor, April (Fowler); Luccombe (Morey); Sandown (Taylor).

A. incana, *Er.* In some numbers in stems of Reed-mace, pond in brickfield near Sandown waterworks, June (Taylor).

Homalota languida, *Er.* One specimen, Luccombe, July (Champion).

H. gregaria, *Er.* By grubbing at foot of cliffs, Sandown, Aug.; also on muddy deposit at base of cliffs, Shanklin, Aug. (Newbery); Sandown (Donisthorpe).

H. luridipennis, *Mann.* Under plants on beach, Sandown, and on muddy deposit at foot of cliffs, Shanklin, Aug. (Newbery).

H. hygrotopora, *Kr.* Under plants on beach, Aug. (Newbery).

H. elongatula, *Gr.* On muddy deposit at foot of cliffs, Shanklin, Aug. (Newbery); salt marsh, Yarmouth, Aug. (Butler).

H. volans, *Scriba.* Adgestone, May (Taylor); Newport, Aug. (Butler).

H. vestita, *Gr.* Common under seaweed all round the coast.

H. sylvicola, *Fuss.* (*hypnorum*, *Kies.*). In sand-pit, Marvel Copse (Morey).

H. halobrectha, *Sharp* (*flavipes*, *Thoms.*). Common under seaweed, coast near Quarr Abbey, Aug. (Newbery).

H. puncticeps, *Thoms.* Common under seaweed, coast near Quarr Abbey, Aug. (Newbery).

H. princeps, *Sharp.* Under seaweed, Ventnor, April, 1881 (Fowler).

This insect is considered synonymous with *halobrectha*, Sharp (see above) in the European Catalogue of 1906.

H. angustula, *Gyll.* I. of Wight (Fowler, B.C.).

H. circellaris, *Gr.* In garden, Newport (Morey); near Sandown (Taylor).

H. analis, *Gr.* Very common and gen. dist.

H. decipiens, *Sharp* (*analis*, *Gr.* ♀). By sweeping, Gurnard, June (Morey); in numbers in stack refuse near Sandown Fort and also near Brading, April (Taylor).

H. xanthoptera, *Steph.* (*castanoptera*, *Mann.*). By sweeping, Pan Down, Shide, Oct. (Newbery).

H. trinotata, *Kr.* On dead snail, Newport (Morey); Sandown (Taylor).

H. triangulum, *Kr.* Ditch refuse, Bordwood near Sandown (Taylor).

H. fungicola, *Thoms.* (*nitidicollis*, *Fair?*). Common and gen. dist.

H. palustris, *Kies.* On muddy deposit, foot of cliffs near Shanklin, Aug. (Newbery).

H. sericea, *Muls.* (*amicula*, *Steph.*). Marvel Copse, Aug. (Butler); in tree fungus, same place, Oct. (Newbery).

H. inquinula, *Gr.* In tree fungus, Marvel Copse, Oct. (Newbery); in dung, Sandown, Aug. (Donisthorpe).

H. nigra, *Kr.* (*zosteræ*, *Thoms.*). In garden refuse, Newport, Oct. (Morey); Sandown (Taylor).

H. cauta, *Er.* (*parvula*, *Mann.*). In dung, Pan Down, April; also by sweeping in meadow, Newport, June (Morey).

H. atramentaria, *Gyll.* Rather common: by sweeping in meadow, Newport, June (Morey); in dung, Carisbrooke (Newbery); Sandown (Taylor).

H. longicornis, *Gr.* Sandown (Donisthorpe & Taylor).

H. sordida, *Marsh.* Under stones at sides of stream, Luccombe Chine, Aug. (Newbery).

H. pygmaea, *Gr.* Amongst garden refuse, Newport, Sept. (Morey).

H. muscorum, *Bris.* (*parva*, *Sahl. var. muscorum*, *Bris.*). In grass at roots of decaying tree, Quarr Abbey, Aug. (Newbery).

H. laticollis, *Steph.* Rubbish-heap in garden, Newport, Oct. (Morey); Sandown (Donisthorpe).

H. fungi, *Gr.* Very common everywhere.

Tachyusa scitula, *Er.* In damp sand, Luccombe (Champion).

Myrmecopora uvida, *Er.* Common under seaweed on coast near Quarr Abbey and elsewhere.

M. sulcata, *Kies.* Common under seaweed with the last species.

Falagria sulcata, *Payk.* Common in garden refuse, Newport (Morey); Sandown (Taylor).

F. thoracica, *Curt.* By grubbing, roots of plants at foot of cliffs, Sandown, Aug. (Newbery & Taylor).

F. obscura, *Gr.* Very common in garden refuse and at roots of plants: Newport, Sandown, &c.

Autalia impressa, *Ol.* In decayed fungi, Marvel Copse, Oct. & Nov. (Morey).

A. rivularis, *Gr.* By sweeping, Newport, Oct. (Morey); Brading, Aug. (Butler); Sandown (Taylor).

Agaricochara laevicollis, *Kr.* In plenty in fungus, Newport, Oct. (Morey).

Sipalia testacea, *Bris.* In numbers under stones, &c., below high-water mark, Sandown, July (Champion); Ventnor (Donisthorpe).

Bolitochara lucida, *Gr.* In tree fungus, Marvel Copse, Oct. (Newbery).

B. bella, *Märk.* In tree fungus, Marvel Copse, Oct. (Morey).

Phytosus balticus, *Kr.* Rather common and gen. dist. on coast.

P. spinifer, *Curt.* Rather common and gen. dist. on coast.

Diglossa mersa, *Hal.* Not uncommon under shingle, &c., below high-water mark: Ventnor, Bembridge, Sandown, &c.

It is quite possible that some of the records refer to *D. submarina*, Fair.

Oligota inflata, *Mann.* By sweeping near haystack, Marvel Copse, Oct. (Newbery).

O. atomaria, *Er.* Taken with the last species in profusion (Newbery); manure heap, Newport, Aug. (Butler); Sandown (Taylor).

O. punctulata, *Heer.* By sweeping grass, Newport, May (Morey); Sandown (Taylor).

O. apicata, *Er.* In tree fungus, Marvel Copse (Morey).

Myllaena intermedia, *Er.* Dried watercourse, Combley Wood, Aug. (Butler).

M. gracilicornis, *Fair.* A single specimen of this insect—believed to be unique as British—taken under stones at foot of small waterfall on coast a little west of Ventnor (Fowler).

M. infuscata, *Matth.* Two specimens under seaweed, Sandown, April (Taylor).

M. brevicornis, *Matth.* On muddy deposit, foot of cliffs near Shanklin, Aug. (Newbery).

Habrocerus capillaricornis, *Gr.* Sedge refuse, Yaverland, April (Taylor).

Hypocypsus longicornis, *Payk.* By sweeping, and in garden refuse, &c., Newport (Morey).

H. seminulum, *Er.* One specimen on a window in barn, Newport, May (Morey).

Conosoma pubescens, *Gr.* In tree fungus, Marvel Copse, Oct. (Newbery); Sandown (Donisthorpe & Taylor).

C. immaculatum, *Steph.* In haystack refuse, Northlands Copse, Yaverland, April (Taylor).

C. pedicularium, *Gr.* Several specimens in small stack of rough grass, in marshes a mile inland from Sandown (Taylor).

C. lividum, *Er.* (*pedicularium*, *Gr. var. lividum*, *Er.*). A single specimen by grubbing, roots of grass, Carisbrooke Castle, Oct. (Morey); several specimens in haystack refuse, Sandown, April (Taylor).

Tachyporus formosus, *Matth.* Moss, &c., Luccombe, April (Fowler); in reed refuse, Sandown (Blatch); Blackgang, Chale, &c. (Donisthorpe); Sandown, April (Taylor).

T. chrysomelinus, *L.* Common at roots of grass.

T. pallidus, *Sharp* (*scutellaris*, *Rye*). A single specimen with pale head near Sandown (Taylor).

T. hypnorum, *F.* Common at roots of grass.

T. brunneus, *F.* (*nitidulus*, *F.*). Common at roots of grass.

Cilea silphoides, *L.* In garden refuse, Newport (Morey); Barnes, near Brighthstone, June (Taylor).

Tachinus humeralis, *Gr.* Dead mole, Marvel Copse, May (Morey).

T. rufipes, *De G.* Common and gen. dist.

T. subterraneus, *L.* In dung on cliff, Ventnor, Dec.; also in timber yard, Newport, Dec. (Morey); Sandown (Taylor).

T. subterraneus, *L. var. bicolor*, *Gr.* Near Sandown (Taylor).

Megacronus analis, *Pk.* (*Bryocharis analis*, *Pk.*). Sand-pit, Marvel Copse, March (Morey); Blackgang and Sandown (Donisthorpe).

Bolitobius trinitatus, *Er.* In sand-pit, Marvel Copse, March (Morey).

B. pygmaeus, *F.* (*thoracicus*, *F.*). In fungus, Marvel Copse, Oct.; also in fungus, Newtown, Aug. (Morey).

Mycetoporus splendens, *Marsh.* Sandown (Donisthorpe).

M. longulus, *Mann.* One specimen on wall of Coastguard Station, near Sandown, April (Taylor).

M. clavicornis, *Steph.* Moss in waterfall, Luccombe; also in Parkhurst Forest (Donisthorpe).

M. splendidus, *Gr.* On mud and sand in damp places, Luccombe Chine, April (Fowler).

Heterothops binotata, *Steph.* Common under seaweed near Quarr Abbey (Newbery); Bembridge (Ellis).

Quedius ventralis, *Arag.* In damp wood mould, Freshwater (Donisthorpe).

Q. mesomelinus, *Marsh.* (*fulgidus* of Martin's list). Undercliff (Martin).

Q. fulgidus, *F.* In timber yard, Newport, June (Morey).

Q. cruentus, *Ol.* In manure heap, Newport, Oct. (Morey).

Q. cinctus, *Pk.* Beneath stone, Marvel Copse, June (Morey).

Q. fuliginosus, *Gr.* Not uncommon near Newport; also at Ventnor, July (Morey).

Q. tristis, *Gr.* Sand-pit, Marvel Copse, June (Morey); St. Helens (Holland); near Shanklin (Poole); Sandown (Taylor).

Q. molochinus, *Gr.* Ventnor, July (Morey); Sandown (Taylor); Shanklin (Poole); St. Helens (Holland).

Q. fumatus, *Steph.* One specimen in sedge refuse, Sandown, April (Taylor).

Q. picipes, *Mann.* Under hedge trimmings, Carisbrooke, Oct. (Newbery); near Sandown (Beare & Taylor); Niton (Sharp).

Q. nigriceps, *Kr.* Bordwood Copse, May (Taylor).

Q. maurorufus, *Gr.* On muddy deposit at foot of cliffs near Shanklin, Aug. (Newbery); Ventnor, July (Champion); Sandown (Taylor).

Q. obliteratedus, *Er.* Under hedge trimmings, Carisbrooke, Oct. (Newbery).

Q. semiaeneus, *Steph.* By sweeping, Marvel Copse, June; also at Brading, June (Morey).

Creophilus maxillosus, *L.* In numbers in dead dog on shore, Cowes; also in street, Newport, June (Morey).

Leistotrophus nebulosus, *F.* (*Ontholestes tessellatus*, *Geoff.*). Rather common and gen. dist.

L. murinus, *L.* (*Ontholestes murinus*, *L.*). Rather common and gen. dist.

Staphylinus caesarius, *Ceder.* I. of Wight (Fowler, B.C.).

S. stercorarius, *Ol.* Running in roadway, Sandown, Sept. (Beare); on ant-hill, Chale; under stones, Sandown; and also near Freshwater (Donisthorpe).

Ocypus olens, *Müll.* Common and gen. dist.

O. brunnipes, *F.* On floor of outhouse, Newport, Sept. (Morey).

O. cupreus, *Ross.* (*aeneocephalus*, *De Geer*). In cow-dung, the Landslip, July (Morey); roots of grass on cliffs, Alum Bay, Aug. (Newbery).

O. pedator, *Gr.* Under stones, Bembridge Down; also on chalk downs, Freshwater, July (Champion); roots of grass on cliffs, Sandown (Donisthorpe).

O. ater, *Gr.* Rather common: St. Helens, Freshwater, Newport, Yarmouth, Bembridge, &c.

O. morio, *Gr.* (*globulifer*, *Geoffr.*). Common and gen. dist.

O. compressus, *Marsh.* Rather common: Sandown, Ventnor, Newport, &c.

Philonthus splendens, *F.* In dung near Sandown (Taylor).

P. intermedius, *Lac.* Rare, Undercliff (Martin).

P. laminatus, *Creutz.* Ryde (Morley); near Shanklin (Poole).

P. aeneus, *Ross.* On dead fowl, Newport, July (Morey); Sea View (Holland).

P. decorus, *Gr.* Shanklin (Poole).

P. politus, *F.* (*fuscipennis*, *Mann.*). Moss, Parkhurst Forest, Jan.; under stone, Pan Down, April; Newport, Aug. (Morey); Sandown (Taylor).

P. lucens, *Er.* (*Mannerheimi*, *Fawv.*). Bogs, Alverstone (Ellis).

P. varius, *Gyll.* Garden refuse, Newport, Aug. (Morey); St. Helens (Holland).

P. albipes, *Gr.* By sweeping near stream, Rookley Wilderness, Sept. (Morey).

P. umbratilis, *Gr.* Cut reeds, &c., Luccombe Chine, April (Fowler).

P. cephalotes, *Gr.* Timber yard, Newport, May (Morey).

P. fimetarius, *Gr.* Dead fowl, Newport, July; also in house, Newport, and by sweeping, Brading, June (Morey).

P. sordidus, *Gr.* Blackgang (Sharp); near Sandown (Taylor).

P. concinnus, *Gr.* Sea View (Holland).

P. corruscus, *Gr.* A single specimen near Sandown (Taylor).

P. fumigatus, *Er.* (*immundus*, *Gyll.*). Amongst garden refuse, Newport, Sept. (Morey).

P. debilis, *Gr.* Garden refuse, Newport, Sept. (Morey).

P. sanguinolentus, *Gr.* Garden refuse, Newport, Aug. (Morey).

P. varians, *Payk.* In dung, Pan Down, April; Ventnor, July; also under stones, Luccombe, May (Morey); at roots of plants, Sandown, Aug. (Newbery & Taylor).

- P. ventralis**, *Gr.* Garden refuse, Newport, Aug. (Morey).
P. discoideus, *Gr.* Timber yard, Newport, June (Morey).
P. fumarius, *Gr.* In plenty in marshy place, Sandown (Beare & Donisthorpe); Bembridge (Ellis).
P. nigritulus, *Gr.* Common and gen. dist.
Cassius fucicola, *Curt.* Common under seaweed.
C. xantholoma, *Gr.* Very common under seaweed.
C. xantholoma var. **variegatus**, *Er.* Under seaweed, Sandown, May (Taylor).
C. sericeus, *Holme.* Common under seaweed.
Actobius signaticornis, *Rey.* On mud in damp places, Luccombe (Fowler); muddy deposits, Sandown (Champion, Newbery, &c.); Chale (Sharp).
A. villosulus, *Steph.* (*Neobisnius villosulus*, *Steph.*). Luccombe (Champion).
Xantholinus glabratus, *Gr.* Not uncommon in roadways, &c.: Niton, Newport, Pan Down, St. Helens.
X. punctulatus, *Payk.* Common.
X. tricolor, *F.* Under stones on coast, gen. dist.: Alum Bay, Totland Bay, Niton, St. Helens, &c.
X. linearis, *Ol.* Common and gen. dist.
X. longiventris, *Heer.* In timber yard, Newport, March (Morey); near Sandown (Taylor).
Leptacinus linearis, *Gr.* (*batychrus*, *Gyll.* var. *linearis*, *Gr.*). Common in garden refuse, Newport (Morey); Sandown (Taylor).
Othius fulvipennis, *F.* (*punctulatus*, *Goeze*). Newport, Aug. (Butler); in fungus, Marvel Copse, Oct. (Newbery).
O. melanocephalus, *Gr.* One specimen, Sandown (Taylor).
O. myrmecophilus, *Kies.* Sand-pit, Marvel Copse, June (Morey).
Lathrobium elongatum, *L.* Sandown (Holland & Taylor).
L. boreale, *Hoch.* (*ripicola*, *Czwal.*). St. Helens (Holland).
L. fulvipenne, *Gr.* Near Shanklin (Poole).
L. angustatum, *Lac.* Not rare on muddy deposits at foot of cliffs: Luccombe, Sandown, Ventnor, &c.
L. brunnipes, *F.* Marvel Copse, April (Morey); at roots of plants, Totland, Aug. (Newbery); Sandown (Taylor).
L. longulum, *Gr.* Sandown (Taylor).
L. terminatum, *Gr.* Nettleston (Morley).
L. terminatum var. **immaculatum**, *Fowl.* Near Yarmouth, April (Gorham).
L. pallidum, *Nord.* I. of Wight (Fowler, B.C.).
L. multipunctum, *Gr.* Rather common and gen. dist.
Achenium depressum, *Gr.* Under stones in a dry ditch, Freshwater, Aug. (Newbery).
Stilicus rufipes, *Germ.* Niton (Sharp).
S. affinis, *Er.* (*orbiculatus*, *Payk.*). By sweeping, Bowcombe Down, June (Morey); near Sandown (Taylor).

Scopaeus sulcicollis, *Steph.* Roots of grass near Sandown (Donisthorpe); Bembridge (Ellis).

Medon castaneus, *Gr.* In shingle, Steephill Cove (Guyon).

This record probably refers to *pocofer*, *Peyr.*

M. pocofer, *Peyr.* (*pocoferus*, *Peyr.*). Waterfall west of Ventnor (Beare, Donisthorpe, Fowler, &c.).

M. ripicola, *Kr.* Ryde, in some numbers (Ford); Bembridge (Ellis).

M. fuscus, *Mann.* Roots of grass near Sandown (Donisthorpe).

M. propinquus, *Bris.* Garden refuse, Newport, Sept. (Morey); Sandown (Taylor).

M. melanocephalus, *F.* Newport in June and Sept. (Morey).

Lithocharis ochracea, *Gr.* Very common in garden refuse, Newport (Morey); Sandown (Donisthorpe).

Sunius angustatus, *Payk.* (*Astenus angustatus*, *Payk.*). Common and gen. dist.: Shide, Newport, Sandown, Niton, &c.

S. diversus, *Aubé* (*pulchellus*, *Heer.*). A single specimen in manure heap, Newport, Oct. (Morey).

S. intermedius, *Er.* (*immaculatus*, *Steph.*). On mud and sand in damp places, Luccombe Chine, April (Fowler).

Paederus littoralis, *Gr.* Very common and gen. dist.: hedgebanks, dead leaves, &c.

P. riparius, *L.* St. Helens (Holland).

P. fuscipes, *Curt.* Luccombe Chine (Fowler); Ryde (Guyon).

Dianous caeruleus, *Gyll.* Rather common in moss in waterfalls: Ventnor, Luccombe, &c.

Stenus guttula, *Müll.* On wet cliffs on coast; rather common and gen. dist.: Alum Bay, Totland, Sandown, Luccombe, &c.

S. bimaculatus, *Gyll.* Sandown (Taylor).

S. speculator, *Lac.* (*clavicornis*, *Scop.*). Parkhurst Forest (Sharp); near Sandown (Taylor); near Shanklin (Poole).

S. providus, *Er. var. Rogeri*, *Kr.* (*Stenus Rogeri*, *Kr.*). Beneath stones on shore, Luccombe Chine, June (Morey); muddy deposit at base of cliffs, Shanklin, Aug. (Newbery); Ventnor, July (Champion); Sandown (Taylor).

S. lustrator, *Er.* Parkhurst Forest (Fowler, B.C.).

S. bupthalmus, *Gr.* Precise locality not noted (Butler).

S. melanopus, *Marsh.* Sand-pit, Marvel Copse, April (Morey).

S. crassus, *Steph.* Haystack near Blackpan Common, April (Taylor).

S. brunnipes, *Steph.* Sand-pit, Marvel Copse, April (Morey); Totland, Aug. (Butler).

S. impressus, *Germ.* By sweeping, Newport, May; also Marvel Copse, April (Morey); Niton (Sharp); Sandown (Taylor).

S. aerosus, *Er.* (*aceris*, *Steph.*). I. of Wight (Fowler, B.C.).

S. flavipes, *Steph.* By sweeping, Parkhurst Forest, June (Morey); Sandown (Taylor).

S. pubescens, *Steph.* By sweeping, margin of stream, Carisbrooke, June (Morey).

S. binotatus, *Ljun.* Amongst water plants in pond, Heytesbury Farm, Parkhurst, June (Morey); Sandown (Donisthorpe).

S. nitidiusculus, *Steph.* Near dung, Ventnor, Dec. (Morey); Marvel Copse, Aug. (Butler).

S. picipennis, *Er.* By sweeping, Brading, June (Morey); Parkhurst Forest, Aug. (Butler); Ventnor, July (Champion).

S. picipes, *Steph.* By sweeping in field, Newport, May, also at Brading in June; in sand-pit, Marvel Copse, March (Morey).

S. similis, *Hbst.* Common and gen. dist.

S. solutus, *Er.* One specimen swept off *Equisetum* near Sandown Station, Sept. (Beare).

S. tarsalis, *Ljun.* Brading, Aug. (Butler); Sandown (Donisthorpe).

S. paganus, *Er.* (*fulvicornis*, *Steph.*). Heytesbury Farm, Aug. (Butler); near Sandown (Taylor).

S. fornicatus, *Steph.* One specimen at margin of pond, Heytesbury Farm, Oct. (Morey).

Oxyporus rufus, *L.* In fungus, Marvel Copse, Aug. (Morey).

Bledius spectabilis, *Kr.* In marshy places, Sandown, July (Champion); St. Helens (Holland); Luccombe Chine (Taylor).

B. tricornis, *Hbst.* Sandown, July (Champion); Yarmouth (Donisthorpe).

B. bicornis, *Germ.* Sandown (Champion); Luccombe (Ellis); Bembridge (Donisthorpe).

B. arenarius, *Payk.* Luccombe (Guyon).

B. subterraneus, *Er.* Sandown, July (Champion).

B. longulus, *Er.* In damp soil, Luccombe, not rare (Champion); side of the cliff, Luccombe, April (Fowler).

B. opacus, *Block.* Sides of the cliff and sandy places below Luccombe Chine, April (Fowler); abundant at Sandown, July (Champion).

B. atricapillus, *Germ.* Luccombe in plenty, also at Blackgang (Donisthorpe); Luccombe and Ventnor, April (Fowler); one specimen under seaweed, Sandown (Champion).

Platystethus arenarius, *Fourc.* On herbage, Gurnard Bay, June (Morey).

P. nodifrons, *Sahl.* On mud and sand in damp places, Luccombe Chine, April (Fowler).

P. nitens, *Sahl.* Near Sandown (Donisthorpe & Taylor).

Oxytelus rugosus, *F.* Very common.

O. insecatus, *Gr.* I. of Wight (Fowler).

O. sculptus, *Gr.* Common in garden refuse, Newport (Morey).

O. laqueatus, *Marsh.* In garden refuse, Newport; also at Ventnor, July (Morey); Sandown (Donisthorpe).

O. inustus, *Gr.* In dung on cliff, Ventnor, Dec. (Morey); under seaweed, Yarmouth, Aug. (Newbery).

- O. sculpturatus**, *Gr.* Rather common and gen. dist.
- O. maritimus**, *Thoms.* (*Perrisi, Fauv.*). Under seaweed, Ventnor (Champion).
- O. nitidulus**, *Gr.* Rather common and gen. dist.
- O. complanatus**, *Er.* Common and gen. dist.
- O. clypeonitens**, *Pand.* Rather common in stream under stones, Luccombe Chine (Champion).
- O. tetracarinatus**, *Block.* Common and gen. dist.
- Haploderus caelatus**, *Gr.* By sweeping herbage on rough land, Gurnard Bay, June (Morey).
- Ancyrophorus aureus**, *Fauv.* Beneath stones in stream, Luccombe Chine (Champion); I. of Wight (Wollaston, in E.M.M. 1873-4 p. 112).
- Trogophloeus bilineatus**, *Steph.* Margin of pond, Heytesbury Farm, Parkhurst, May (Morey); under stones on clay cliffs, Alum Bay, Aug. (Newbery); under stone in watercourse, Combley Wood, Aug. (Butler); Ventnor (Donisthorpe).
- T. elongatulus**, *Er.* Sandown (Taylor).
- T. corticinus**, *Gr.* By sweeping at Gurnard, June (Morey).
- Thinobius brevipennis**, *Kies.* Rather common, Sandown (Champion); Totland Bay (Dr. Sharp).
- Syntomium aeneum**, *Müll.* Sand-pit, Marvel Copse, April (Morey); Sandown (Champion).
- Lesteva longelytrata**, *Goeze.* Sand-pit, Marvel Copse, April; also near running water, Luccombe Chine, May (Morey); Luccombe (Taylor).
- L. pubescens**, *Mann.* Moss in waterfalls at Luccombe and Ventnor (Donisthorpe).
- L. sicula**—of Fowler and Brit. colls. *nec Er.* (*Heeri, Fauv.*). Ventnor and Luccombe (Donisthorpe); in moss on side of cliff, Sandown (Taylor).
- Acidota cruentata**, *Mann.* Attributed to the I. of Wight by Guyon, probably the *A. rufa*, from Ventnor, of Martin's list.
- Lathrimaeum unicolor**, *Marsh.* Beneath dead leaves, Marvel Copse, April; also in decayed fungi, same place, Dec. (Morey).
- Micralymma brevipenne**, *Gyll.* (*marinum, Stroem.*). Boulders below high-water mark, Sandown (Champion); Ventnor (Donisthorpe & Fowler).
- Philorhinum humile**, *Er.* (*sordidum, Steph.*). On *Ulex*, common and gen. dist.
- Homalium rivulare**, *Payk.* By sweeping, Newport, June; also in decayed fungi, Marvel Copse, Nov. (Morey).
- H. laeviusculum**, *Gyll.* Not uncommon under seaweed near Quarr Abbey, Aug. (Newbery); shore, Luccombe Chine, May (Morey); Sandown (Taylor).
- H. riparium**, *Thoms.* With the last species, Quarr Abbey, Aug. (Morley & Newbery); Sandown (Taylor).

H. oxyacanthae, *Gr.* By sweeping in meadow, Newport, June (Morey).

H. excavatum, *Steph.* In garden refuse, Newport (Morey); Sandown (Taylor); near Shanklin (Poole).

H. caesum, *Gr.* In garden, Newport, May (Morey).

H. rufipes, *Fauv.* (*Phyllodrepa floralis*, *Payk.*). On flowers of *Syringa* in garden, Newport (Morey); Niton (Sharp); near Shanklin (Poole); Bordwood Copse (Taylor).

H. gracilicorne, *Fair.* (*Phyllodrepa gracilicornis*, *Fair.*). A single specimen—confirmed by Capt. St. C. Deville—swept from herbage, Marvel Copse, June 1884 (Morey).

H. deplanatum, *Gyll.* (*Xylodromus depressus*, *Gr.*). Niton (Sharp).

Eusphalerum primulae, *Steph.* (*Anthobium primulae*, *Steph.*). I. of Wight, no locality given (Donisthorpe's list).

Anthobium ophthalmicum, *Payk.* In profusion on flowers of *Umbelliferae* in copse, Godshill, July (Morey).

Proteinus ovalis, *Steph.* In decayed fungus, Marvel Copse in autumn (Morey & Newbery); Sandown, April (Taylor).

P. brachypterus, *F.* Marvel Copse, with the last species.

Megarthus depressus, *Payk.* By sweeping, Newport, June and Oct. (Morey); Niton (Sharp); in a dead cat, Sandown (Taylor).

M. sinuatocollis, *Lac.* In tree fungus, Marvel Copse, Oct. (Morey); under hedge trimmings, Carisbrooke, Oct. (Newbery).

M. hemipterus, *Ill.* In putrid fungi, Parkhurst Forest (Donisthorpe).

Phloeobium clypeatum, *Müll.* Under hedge trimmings, Carisbrooke, Oct. (Newbery).

Pseudopsis sulcata, *Newm.* I. of Wight ("1834, F. Walker," in Donisthorpe's list).

CLAMBIDAE

Calyptromerus dubius, *Marsh.* On wooden fence in garden, Newport, July (Morey); in debris of rushes, Luccombe (Guyon).

Clambus armadillo, *De G.* Sandown (Guyon).

SILPHIDAE

Agathidium atrum, *Payk.* St. Helens (Holland).

A. seminulum, *L.* In tree fungus, Marvel Copse, Oct. (Morey); in nests of *Formica rufa*, Parkhurst Forest (J. J. Walker); moss, Shanklin (Guyon).

A. laevigatum, *Er.* In sand-pit, Marvel Copse, April and July (Morey); under plants on beach, Sandown, Aug. (Newbery); Luccombe Chine, April (Fowler).

A. nigrinum, *Sturm.* In fungus, Marvel Copse, Nov. (Morey).

Amphicyllis globus, *F.* Moss, Shanklin (Guyon).

Liodes orbicularis, *Hbst.* (*Anisotoma orbicularis*, *Hbst.*). I. of Wight (Wollaston, in E.M.M. 1873-4, p. 112).

Cyrtusa pauxilla, *Schmidt*. Face of the cliff, Sandown, Aug. (Newbery); Ashey Down, by evening sweeping, July (Champion); Chale Chine (Donisthorpe).

Anisotoma dubia, *Kug.* (*Liodes dubia*, *Kug.*). Luccombe, July (Champion); Chale Chine (Donisthorpe).

A. badia, *Sturm* (*Liodes badia*, *Sturm*). At roots, top of cliffs, Totland Bay, Aug. (Newbery).

A. similata, *Rye* (*Liodes similata*, *Rye*). Blackgang and Chale (Donisthorpe).

A. brunnea, *Sturm*. A single specimen at Chale Chine, July (Donisthorpe, E.M.M. xlv. 60).

A. calcarata, *Er.* (*Liodes calcarata*, *Er.*). Redcliff, Sandown (Morley); moss, Niton (Guyon).

Colenis dentipes, *Gyll.* (*immunda*, *Sturm*). Recorded without locality in Guyon's list.

Hydnobius punctatissimus, *Steph.* (*punctatus*, *Sturm*, *var. punctatissimus*, *Steph.*). Moss, no locality given (Guyon).

Necrophorus humator, *Goeze*. In dead cat in plantation at Freshwater, April; also under dead fowl in garden, Newport, July (Morey).

N. mortuorum, *F.* (*vespilloides*, *Hbst.*). In carcasses, no locality given (Guyon); in dead lamb, Alverstone (Taylor).

N. vestigator, *Hersch.* In dead hedgehog, Marvel Copse, June; also in dead rook, same place (Morey); near Sandown (Taylor).

N. ruspator, *Er.* (*investigator*, *Zett.*). Several specimens under dead mole, Marvel Copse, June; also in dead bird, Newport, Aug. (Morey); Sandown (Taylor).

N. interruptus, *Steph.* Under dead rabbits, Blackgang and Chale Chine (Donisthorpe); Newport, Oct. (Morey); near Sandown (Taylor).

N. vespillo, *L.* In garden, Newport, April (Morey).

Necrodes littoralis, *L.* Under dead dog on shore, Cowes (Morey).

Silpha tristis, *Ill.* Rather common, and widely distributed.

S. nigrita, *Creuz.* (*tyrolensis*, *Laich.*, *var. nigrita*, *Creuz.*). Carcasses, Ryde (Guyon).

S. obscura, *L.* In carcasses, I. of Wight (Fowler, B.C.).

S. opaca, *L.* In timber yard, April (Morey); "carcasses," no locality given (Guyon).

S. rugosa, *L.* In dead rook, Gurnard Bay, June; also beneath dead hare, Freshwater, April (Morey); St. Helens (Holland).

S. sinuata, *F.* Several specimens in dead rook, Gurnard Bay, June (Morey); St. Helens (Holland); Sandown (Taylor).

S. laevigata, *F.* In garden, Ventnor, May; also on Bowcombe Down, June (Morey); Ryde (Holland); Sandown (Taylor).

S. atrata, *L.* Amongst loose bark in timber yard, Newport, July (Morey); Cowes (Morley); Bembridge (Holland).

Choleva angustata, *F.* (*Sturmi*, *Bris.*). Sandown (Taylor).

C. cisteloides, *Fröl.* On a window, Newport, June (Morey).

C. velox, *Spence* (*Nargus velox*, *Spence*). In fungus, Froglands, Oct. (Morey); under hedge trimmings, Carisbrooke, Oct. (Newbery); sand-pit, Marvel Copse, March (Morey).

C. Wilkini, *Spence* (*Nargus Wilkini*, *Spence*). In fungus, Marvel Copse, Nov. (Morey).

C. nigricans, *Spence* (*Catops nigricans*, *Spence*). Under dead mole, Marvel Copse, June (Morey); under hedge trimmings, Carisbrooke, Oct. (Newbery).

C. grandicollis, *Er.* (*Catops grandicollis*, *Er.*). Many specimens in dead bird near Sandown Fort (Taylor).

C. tristis, *Panz.* (*Catops tristis*, *Panz.*). Near Sandown (Taylor).

C. Kirbyi, *Spence* (*Catops Kirbyi*, *Spence*). In fungus, Pan Down, Oct. (Morey).

C. chrysomeloides, *Panz.* (*Catops chrysomeloides*, *Panz.*). "Limpet Run," Sandown (Taylor).

C. Watsoni, *Spence* (*Catops Watsoni*, *Spence*). In dead fowl, Newport, Aug.; also beneath dead mole, Marvel Copse, June (Morey).

Ptomaphagus sericeus, *Panz.* (*subvillosus*, *Goeze*). Common and gen. dist.

P. sericatus, *Chaud.* On ground in garden, Newport, Sept. (Morey).

P. varicornis, *Rosh.* Recorded (in error?) as a "local species" (Guyon).

Colon brunneum, *Lat.* Recorded without locality in Guyon's list.

SCYDMENIDAE

Neuraphes carinatus, *Muls.* One specimen by sweeping, Newport (Morey).

N. longicollis, *Mots.* I. of Wight (Fowler, B.C.).

Scydmaenus exilis, *Er.* (*Stenichnus exilis*, *Er.*). Parkhurst Forest (Fowler, B.C.).

Euconnus denticornis, *Müll.* Alverstone (Ellis).

E. fimetarius, *Chaud.* By sweeping in meadow, Newport, May (Morey).

Eumicrus tarsatus, *Müll.* (*Scydmaenus tarsatus*, *Müll.*). In garden refuse, Newport, Oct. (Morey).

Euthia scymenoides, *Steph.* A single specimen on the sand, Sandown, July (Champion).

Cephennium thoracicum, *Müll.* Moss, Shanklin (Guyon).

CLAVIGERIDAE

Claviger testaceus, *Preys.* With ants, Blackgang (Donisthorpe); rarely on the chalk downs, near Sandown, July (Champion); nests of *Lasius flavus*, Freshwater (Fowler, B.C.).

PSELAPHIDAE

Pselaphus Heisei, *Hbst.* Moss, Shanklin and Ventnor (Guyon).
Tychus niger, *Payk.* By sweeping grass in meadow, Newport, May; also on Bowcombe Down, June (Morey).

Machaerites glabratus, *Rye* (*Bythinus glabratus*, *Rye*). One specimen under a stone in company with *Trichonyx Märkeli*, Sandown, April (Fowler).

Bythinus puncticollis, *Den.* Moss, I. of Wight—no locality given (Guyon).

B. bulbifer, *Reich.* Moss, I. of Wight—no locality given (Guyon).

B. Curtisi, *Leach.* Under cut reeds, &c., Luccombe Chine, April (Fowler); moss, Shanklin Copse (Guyon).

B. securiger, *Reich.* Moss, Shanklin Copse (Guyon); I. of Wight (Fowler).

Rybaxis sanguinea, *L.* (*longicornis*, *Leach*). Luccombe Chine (Fowler, B.C.).

Bryaxis Waterhousei, *Rye* (*Brachygluta Waterhousei*, *Rye*). Under stones near shore, tidal refuse, &c., Ventnor, Luccombe and Cowes (Fowler, B.C.).

B. fossulata, *Reich.* (*Brachygluta fossulata*, *Reich.*). In garden refuse, Newport (Morey).

B. Helferi, *Schmidt* (*Brachygluta Helferi*, *Schm.*). By sweeping, Gurnard Bay, June (Morey); Bembridge (Donisthorpe).

B. juncorum, *Leach* (*Reichenbachia juncorum*, *Leach*). By sweeping herbage near stream, Rookley Wilderness, Sept. (Morey); near Sandown (Taylor); near Shanklin (Poole).

B. impressa, *Panz.* (*Reichenbachia impressa*, *Panz.*). Spring Vale, near Ryde, March (Morley).

Trichonyx Märkeli, *Aubé* (*Amauronyx Märkeli*, *Aubé*). Three specimens under a stone in company with ants, Sandown, April (Fowler).

Euplectus sanguineus, *Aubé.* On window in barn, Newport, May (Morey).

E. signatus, *Reich.* In garden refuse, Newport, Sept. (Morey).

TRICHOPTERYGIDAE

Actinopteryx fucicola, *All.* Rarely under seaweed on the beach, Sandown (Champion); under seaweed near Quarr Abbey, Aug. (Newbery).

Trichopteryx grandicollis, *Mann.* By sweeping in meadow, Newport, June; also in timber yard, Newport, Oct. (Morey); Sandown (Taylor).

T. lata, *Matth.* (*intermedia*, *Gill.*). Common in garden refuse, &c., and gen. dist.

Ptenidium punctatum, *Gyll.* Common under seaweed near Quarr Abbey, Aug. (Newbery); in profusion, Ventnor (Fowler, B.C.); Sandown (Taylor).

P. fuscicorne, *Er.* In nests of *Formica rufa*, Parkhurst Forest (J. J. Walker).

P. nitidum, *Heer.* In fungus, Marvel Copse, Aug. (Butler).

P. evanescens, *Marsh.* (pusillum, *Gyll.*). Rather common and gen. dist.

CORYLOPHIDAE

Orthoperus atomarius, *Heer.* Recorded as "*O. punctum*" without locality by Guyon.

Corylophus cassidoides, *Marsh.* Ventnor, April (Fowler); Furzebrake, Ventnor (Guyon).

C. sublaevipennis, *Duv.* Under cut reeds and rubbish, Luccombe Chine, April (Fowler).

Sericoderus lateralis, *Gyll.* Rather common in fungus, by sweeping, &c., Newport and vicinity.

PHALACRIDAE

Phalacrus corruscus, *Panz.* (fimetarius, *F.*). Rather common by sweeping flower-heads of Compositae.—Newport, Sandown, St. Helens, &c.

P. caricis, *Sturm.* On flowers of *Carex*, St. Helens (Holland).

Olibrus corticalis, *Panz.* By beating hedges, Carisbrooke, Oct. (Newbery); by sweeping, Parkhurst Forest, Aug. (Morey).

O. aeneus, *F.* On flowers, common and gen. dist.

O. particeps, *Muls.* By sweeping herbage, the Undercliff, Ventnor, June (Morey); Niton (Sharp).

Stilbus testaceus, *Panz.* By sweeping in meadow, Newport, June (Morey).

COCCINELLIDAE

Subcoccinella 24-punctata, *L.* On ground in copse near Yarmouth, April (Morey).

Adalia bipunctata, *L.* Very common and gen. dist.

A. obliterata, *L.* (Aphidecta obliterata, *L.*). Marvel Copse, May (Morey).

Coccinella 10-punctata, *L.* Frequent in gardens, Newport, (Morey); St. Helens (Holland); near Shanklin (Poole).

C. 11-punctata, *L.* Rather common and gen. dist.

C. 7-punctata, *L.* Very common.

Halyzia 16-guttata, *L.* Recorded without locality by Guyon.

H. 18-guttata, *L.* (Myrrha 18-guttata, *L.*). By sweeping under firs, Marvel Copse, June (Morey).

H. conglobata, *L.* (Coccinella conglobata, *L.*). By sweeping, Parkhurst Forest, Sept. (Morey).

H. 22-punctata, *L.* (Thea 22-punctata, *L.*). Common on nettles, &c.—Newport, Shanklin, Marvel Copse, St. Helens, &c.

Micraspis 12-punctata, *L.* (Micraspis sedecimpunctata, *L.*). Common and gen. dist.

Hyperaspis reppensis, *Hbst.* Blackgang (Guyon).

Scymnus frontalis, *F.* Newport, Aug. (Morey); Niton (Sharp); Yarmouth (Morley).

S. frontalis *var. 4-pustulatus*, *Hbst.* Yarmouth (Elliott); Shanklin Copse (Guyon).

S. suturalis, *Thunb.* (*Pullus suturalis*, *Thunb.*). On firs, Totland (Butler); Freshwater (Holland).

S. testaceus, *Mots.* (*Pullus testaceus*, *Mots.*). Near Shanklin (Poole).

S. haemorrhoidalis, *Hbst.* (*Pullus haemorrhoidalis*, *Hbst.*). In moss: no locality given (Guyon).

S. limonii, *Donis.* (*Pullus limonii*, *Donis.*). First described from two specimens taken at the roots of *Statice limonium* by Mr. Donisthorpe at Yarmouth.

S. capitatus, *F.* On tree stump, Marvel Copse, Sept. (Morey); Shalfleet (Morley).

Rhizobius litura, *F.* Very common at roots of grass, &c.

Coccidula rufa, *Hbst.* Common: pond sides, &c.

HISTERIDAE

Hister 4-maculatus, *L.* Formerly abundant in sandy places near Ryde (Guyon, Fox, &c.).

H. unicolor, *L.* In cow-dung, the Landslip, Ventnor, July (Morey); near Sandown (Taylor).

H. cadaverinus, *Hoff.* In dead fowl in garden, Newport, July; also flying at Newport, June (Morey).

H. succicola, *Thoms.* (*striola*, *Sahl.*). Beneath dead fowl in garden, Newport, July (Morey); Sea View (Holland).

H. carbonarius, *Hoff.* In horse-dung, Pan Down, June (Morey).

H. 12-striatus, *Schr.* Under stones, Bembridge (Donisthorpe); Ventnor (Martin).

H. bimaculatus, *L.* In cucumber frame in garden, Newport, April (Morey); on the wing, Sandown (Donisthorpe); Ventnor (Guyon).

Carcinops minima, *Aube.* Under stones, Sandown (Donisthorpe).

Gnathoncus rotundatus, *Kug.* Under dead rabbit, Chale (Donisthorpe).

Saprinus nitidulus, *Payk.* Newport (Morey); near Shanklin (Taylor); St. Helens (Holland).

S. aeneus, *F.* St. Helens and Bembridge (Holland).

S. virescens, *Payk.* St. Helens (Holland).

S. maritimus, *Steph.* (*Pachylopus maritimus*, *Steph.*). Under *Sonchus*, &c., in clean sand on beach, Sandown, July and Aug. (Champion & Newbery); St. Helens (Holland); Ryde (Guyon); Sandown (Donisthorpe).

Onthophilus striatus, *Forst.* In garden refuse, Newport, Sept. (Morey).

MICROPEPLIDAE

Micropeplus staphylinoides, *Marsh.* St. Lawrence (Martin); Newport (Morey).

NITIDULIDAE

Brachypterus pubescens, *Er.* (glaber, *Steph.*). On nettles: common and gen. dist.

B. urticae, *F.* On nettles: common and gen. dist.

Cercus pedicularius, *L.* (*Cateretes pedicularius*, *L.*). On flowers of *Spiraea*, &c., in great abundance near Brading, April (Fowler).

C. rufilabris, *Latr.* On rushes: common and gen. dist.

Epuraea aestiva, *L.* (*depressa*, *Gyll.*). Common on flowers in spring and gen. dist.

E. melina, *Er.* On flowers, Bordwood Copse, May (Taylor).

E. longula, *Er.* In fungus on a tree trunk near Quarr Abbey, Aug. (Newbery).

E. florea, *Er.* By sweeping in meadow, Newport, May (Morey).

E. obsoleta, *F.* Parkhurst Forest, Aug. (Butler).

Nitidula bipustulata, *L.* (*bipunctata*, *L.*). In dead animals, bones, &c.: near Shanklin (Poole).

N. 4-pustulata, *F.* (*carnaria*, *Schall.*). Under a bone, Bembridge Down (Champion); on old bones, Sandown and Blackgang (Donisthorpe).

N. rufipes, *L.* Under a bone, Bembridge Down (Champion); on old bones, Blackgang (Donisthorpe).

Soronia punctatissima, *Ill.* In fungus on tree trunk near Quarr Abbey, Ryde, Aug. (Newbery).

Omosita colon, *L.* In garden refuse, Newport (Morey).

O. discoidea, *F.* By sweeping in meadow, also in timber yard, May (Morey); Sandown, April (Taylor).

Pria dulcamarae, *Scop.* Common and gen. dist., on *Solanum Dulcamara*.

Meligethes rufipes, *Gyll.* By sweeping, Bembridge, June (Morey).

M. lumbaris, *Sturm.* By sweeping herbage, Bembridge, June (Morey).

M. aeneus, *F.* Very common everywhere.

M. viridescens, *F.* Marvel Copse, June (Morey).

M. brunnicornis, *Sturm.* On charlock, Ventnor, June (Morey).

M. ovatus, *Sturm.* Sand-pit, Marvel Copse, April (Morey); Shide, Aug. (Butler).

M. flavipes, *Sturm.* Ventnor, June (Morey).

M. picipes, *Sturm.* Common and gen. dist.

M. lugubris, *Sturm.* On *Melilotus*, Totland Bay, Aug. (Newbery).

M. obscurus, *Er.* Marvel Copse, June (Morey); near Yarmouth, Aug. (Newbery).

M. erythropus, *Gyll.* Common and gen. dist.

Cychramus luteus, *F.* By sweeping, Marvel Copse, June (Morey).

Cryptarcha strigata, *F.* Undercliff (Martin).

Rhizophagus cribratus, *Gyll.* In tree fungus, Marvel Copse, Oct. (Morey).

R. depressus, *F.* Beneath bark of fallen fir, Marvel Copse, April (Morey).

R. perforatus, *Er.* Beneath board in garden, Newport, March (Morey).

R. bipustulatus, *F.* Beneath bark, Marvel Copse, April (Morey).

TROGOSITIDAE

Tenebrioides mauritanicus, *L.* In a corn shop, Newport (Morey). A cosmopolitan species.

MONOTOMIDAE

Monotoma conicicollis, *Aubé.* Usually associated with ants: Parkhurst Forest (Fowler, B.C.).

M. formicetorum, *Thoms.* (*angusticollis*, *Gyll.*). Usually with ants: Parkhurst Forest (Fowler, B.C.).

M. spinicollis, *Aubé.* In garden refuse, Newport (Morey).

M. picipes, *Payk.* In garden refuse, Newport (Morey).

M. quadricollis, *Aubé.* In manure heap, Newport, Aug. (Butler); on window in barn, Newport, May (Morey).

LATHRIDIIDAE

Lathridius angulatus, *Mann.* By beating hedges, Carisbrooke, Oct. (Newbery); hedges, Newport, Aug. (Butler); Sandown (Donisthorpe).

L. nodifer, *West.* Common in dead hedges, fagots, &c.

Enicmus minutus, *L.* Very common.

E. transversus, *Ol.* Very common.

Cartodere ruficollis, *Marsh.* Newport, Aug. (Butler); near Sandown (Taylor).

C. elongata, *Curt.* Moss, Newchurch (Guyon).

Corticaria pubescens, *Gyll.* By sweeping in meadow, Newport, May (Morey).

C. crenulata, *Gyll.* Niton (Sharp); Sandown (Donisthorpe).

C. elongata, *Gyll.* Not uncommon by sweeping: Gurnard Bay, June; Rookley Wilderness, Aug. (Morey); Sandown (Taylor).

Melanophalma gibbosa, *Payk.* Common and gen. dist.

M. fuscula, *Gyll.* Sand-pit, Marvel Copse, April (Morey); in haystack refuse, Sandown, April (Taylor).

M. fulvipes, *Com.* At roots, foot of cliffs, Sandown, Aug. (Newbery); by sweeping dead grass on the downs, Freshwater, Aug. (Butler); Ventnor, April (Fowler).

CUCUJIDAE

Laemophloeus duplicatus, *Walll.* Under bark, Newchurch (Ellis).

Psammoechus bipunctatus, *F.* In sedge refuse, pond, Heytesbury Farm, Aug. (Butler).

Nausibius dentatus, *Marsh.* In house, Newport, Dec. (Morey).
A cosmopolitan species.

Sylvanus surinamensis, *L.* In a date, Newport, May (Morey).
A cosmopolitan species.

S. unidentatus, *Ol.* Parkhurst Forest (Sharp).

BYTURIDAE

Byturus sambuci, *Scop.* (*fumatus*, *F.*). On *Rubus*.—By sweeping, Marvel Copse, June (Morey).

B. tormentosus, *F.* On buttercups, Marvel Copse, June (Morey).

CRYPTOPHAGIDAE

Diphyllus lunatus, *F.* In the black fungus, *Sphaeria concentrica*, on old ash trees near the town, Ryde (Beare & Donisthorpe).

Telmatophilus typhae, *Fall.* On Reed-mace in brickfield near Sandown, May (Taylor).

T. caricis, *Ol.* Sandown (Taylor).

Antherophagus nigricornis, *F.* On flowers, Blackgang (Donisthorpe).

Cryptophagus lycoperdi, *Hbst.* Usually found in *Lycoperdon*.—In decayed fungus, Marvel Copse, July; also in barn, Newport, May (Morey).

C. setulosus, *Sturm.* Under plants on beach, Sandown, Aug. (Newbery).

C. ruficornis, *Steph.* In company with *Diphyllus* [see above] Ryde (Donisthorpe); in timber yard, Newport, June (Morey).

C. scanicus, *L.* On window in barn, Newport, May (Morey).

C. badius, *Sturm.* I. of Wight (Fowler, B.C.).

C. dentatus, *Hbst.* In decayed fungus, Marvel Copse, July (Morey).

C. acutangulus, *Gyll.* On window in barn, Newport, May (Morey).

C. affinis, *Sturm.* In a dead fowl, Newport (Morey); Marvel Copse, Aug. (Butler).

C. pubescens, *Sturm.* Brading, Aug. (Butler).

Micrambe vini, *Panz.* Common on *Ulex*.

Atomaria fumata, *Er.* (*umbrina*, *Gyll.*). Undercliff, Ventnor, April (Fowler).

A. linearis, *Steph.* Rather common by sweeping: Newport, Luccombe, &c.

A. fuscata, *Schön.* Sand-pit, Marvel Copse, and also by sweeping in same place, April (Morey).

A. pusilla, *Payk.* By sweeping, Carisbrooke, Oct. (Newbery); Sandown (Donisthorpe).

A. atricapilla, *Steph.* Common and gen. dist.

A. berolinensis, *Kr.* (bicolor, *Er.*). Under cut reeds and rubbish, Luccombe Chine, April (Fowler).

A. mesomelas, *Hbst.* (mesomelaena, *Herbst.*). Bordwood near Sandown, May (Taylor).

A. apicalis, *Er.* By sweeping in meadow, Newport, June (Morey); Newport, Aug. (Butler).

A. analis, *Er.* By sweeping in meadow, Newport, June (Morey); Newport, Aug. (Butler); Sandown (Taylor).

A. ruficornis, *Marsh.* Common by sweeping, &c.

Ephistemus gyrinoides, *Marsh.* Common and gen. dist.

SCAPHIDIIDAE

Scaphisoma agaricinum, *L.* In fungi, Niton, Aug. (Sharp).

S. boleti, *Panz.* On fungus, Bembridge, June (Morey); Parkhurst Forest, Aug. (Butler).

Scaphidium 4-maculatum, *Ol.* Near Sandown (Beare).

MYCETOPHAGIDAE

Typhaea fumata, *L.* Rather common and gen. dist., in haystack refuse, by sweeping, &c.

DERMESTIDAE

Dermestes murinus, *L.* In a dead rook in some numbers, Marvel Copse, May; feigned death when disturbed (Morey).

D. undulatus, *Brahm.* In dead bird near Sandown (Taylor); Sandown, April (Fowler).

D. lardarius, *L.* In sack of grass seed, Newport, March; also in a corn-shop, May (Morey); St. Helens (Holland).

Attagenus pellio, *L.* In house, Newport, Feb. and May (Morey).

Anthrenus muscorum, *L.* On flowers in garden, Newport, June; also in house, June (Morey).

A. claviger, *Er.* (fuscus, *Ol.*). By sweeping, Parkhurst Forest, Aug. (Butler).

BYRRHIDAE

Syncalypta hirsuta, *Sharp* (striatopunctata, *Steff.*). Roots of grass, &c., Freshwater, July (Champion & Donisthorpe).

Byrrhus pilula, *L.* Rather common in roads and paths about Newport and elsewhere (Morey); in road, Newport, Aug. (Butler).

Cytilus varius, *F.* (sericeus, *Forst.*). St. Helens (Holland).

Simplocaria semistriata, *F.* "Sandy places"—no locality given (Guyon); St. Helens (Holland).

Limnichus pygmaeus, *Sturm.* In moss, banks of streams and ditches, Luccombe Chine (Fowler); on wet sand, Sandown, June (Champion); running on mud in damp places, Totland Bay, Aug. (Butler).

Aspidiphorus orbiculatus, *Gyll.* I. of Wight (Fowler, B.C.).

GEORYSSIDAE

Georyssus pygmaeus, *F.* On wet sand, Luccombe and Sandown, June (Champion); Luccombe (Guyon).

PARNIDAE (DRYOPIDAE)

Elmis aeneus, *Müll.* (Helmis Maugei, *Bedel*). Luccombe (Holland); Sandown (Taylor).

E. subviolaceus, *Müll.* (*Riolus subviolaceus*, *Müll.*). Under stones at foot of small waterfall west of town, Ventnor (Fowler, B.C.); same place (Sharp); Freshwater (Holland).

E. nitens, *Müll.* (*Riolus nitens*, *Müll.*). "In stream, under stones, Steephill" (Guyon).

Possibly in error for *E. subviolaceus*.

Limnius tuberculatus, *Müll.* In streams, Brading, Aug. (Butler).

Parnus prolifericornis, *F.* (*Dryops auriculatus*, *Geoff.*). Totland Bay, Aug. (Butler).

HETEROCERIDAE

Heterocerus flexuosus, *Steph.* St. Helens (Holland).

H. laevigatus, *Panz.* St. Helens (Holland); Sandown (Taylor).

H. fuscus, *Kies.* On wet mud beneath the cliffs, Blackgang and Chale Chines, by "sluicing" (Donisthorpe); under similar circumstances, Ventnor and Luccombe Chines (Fowler, B.C.); Sandown (A. Ford); Bembridge (Holland).

H. sericans, *Kies.* (*Britannicus*, *Kuw.*). Cowes (Fowler, B.C.).

LAMELLICORNIA

LUCANIDAE

Lucanus cervus, *L.* Not common: seen occasionally just outside Newport and also near Yarmouth; a single specimen picked up on the sea front, Cowes (Morey).

Dorcus parallelipedus, *L.* In decayed wood; also in roads, &c. about Newport, and at Merston (Morey); Sandown (Taylor).

SCARABAEIDAE

Onthophagus ovatus, *L.* In dung: rather common and gen. dist.

O. coenobita, *Hbst.* In dung near Sandown and Carisbrooke, also in carrion (Taylor); paths, Pelham Wood (Guyon).

O. fracticornis, *Preys*. One specimen in timber yard, Newport, April (Morey); St. Helens (Holland).

O. nuchicornis, *L.* I. of Wight (Fowler, B.C.).

Aphodius erraticus, *L.* In dung, as are all the species of the genus except *plagiatus*, *L.* St. Helens (Holland); Sandown (Taylor).

A. subterraneus, *L.* Near Sandown (Taylor).

A. fossor, *L.* In dung: Pan Down and St. Boniface Down, June (Morey); St. Helens (Holland); Sandown (Taylor).

A. haemorrhoidalis, *L.* In dung: Gurnard, May; also the Landslip, Ventnor, July (Morey); St. Helens (Holland); Sandown (Taylor).

A. foetens, *F.* St. Helens (Holland).

A. fimetarius, *L.* Common and gen. dist.

A. ater, *De G.* Sandown (Taylor); the Landslip, Ventnor, July; also on the wing, Newport, May (Morey). A curious var. with bright-red elytra at Newport, May (Morey).

A. constans, *Duft.* Rather common and gen. dist.: Parkhurst, Ventnor, Sandown, Shanklin, &c.

A. granarius, *L.* On the wing, Newport, May (Morey); near Sandown (Taylor).

A. nitidulus, *F.* In plenty on High Down, Freshwater, Aug. (Newbery); St. Helens (Holland).

A. rufescens, *F.* St. Helens (Holland); Blackgang (Donisthorpe).

A. plagiatus, *L.* A coast species which is very rarely found in dung. The black form in great abundance under tidal refuse, Bembridge (Beare & Donisthorpe); St. Helens (Holland).

A. porcus, *F.* Blackgang (Donisthorpe); near Sandown (Taylor); Ventnor (Fowler, B.C.).

A. merdarius, *F.* Pan Down, June; also on the wing, Fairlee, Newport, July (Morey).

A. inquinatus, *Herbst.* Near Sandown (Taylor).

A. sticticus, *Panz.* In dung, Bordwood Copse, May (Taylor).

A. punctatosulcatus, *Sturm.* Very common and gen. dist.: Ventnor, Cowes, St. Helens, Newport, &c.

A. prodromus, *Brahm.* Ryde (Morley); St. Helens (Holland); Shanklin (Poole); Sandown (Taylor).

A. contaminatus, *Hbst.* Rookley Wilderness, Sept. (Morey); Marvel Copse, Oct. (Newbery); Sandown, Oct. (Taylor).

A. obliteratus, *Panz.* I. of Wight (Fowler, B.C.).

A. luridus, *F.* On road, Calbourne; also on shore, Gurnard (Morey); near Shanklin (Poole); in sheep's-dung, Sandown (Taylor).

A. rufipes, *L.* Flying to light, Newport, Aug. and Sept. (Morey); Shanklin (Holland); Sandown (Taylor).

Heptaaulacus villosus, *Gyll.* In numbers under lumps of chalk at foot of cliffs, Freshwater Bay (E. A. Waterhouse); Sandown, June (Elliott); chalk downs, Freshwater, July, rare (Champion).

Aegialia arenaria, *F.* St. Helens (Holland); near Sandown (Taylor).

Geotrupes typhoeus, *L.* (*Ceratophyus typhoeus*, *L.*). Marvel Copse, June (Morey); near Shanklin (Poole); Sandown (Taylor).

G. spiniger, *Marsh.* Flying, Newport, Sept. (Morey); common at Sandown (Taylor).

G. stercorarius, *L.* Common and gen. dist.: Ryde, Parkhurst, Newport, Bonchurch, Yarmouth, &c.

G. mutator, *Marsh.* In roadway, Newport, March and May; also on the wing, Marvel Copse, April (Morey); Sandown (Donisthorpe & Taylor).

G. sylvaticus, *Panz.* (*stercorosus*, *Scriba*). On road, Merston, Aug.; also in dead hedgehog, Marvel Copse, June (Morey); near Shanklin (Poole); Bordwood Copse, May (Taylor).

G. vernalis, *L.* One specimen on St. George's Down (Morey).

Trox scaber, *L.* Usually under dry carcasses, bones, &c.: one specimen, locality not noted (Morey); cliffs, Ventnor (Sharp); foot of the cliff, Chale Chine (Donisthorpe).

Hoplia philanthus, *Füss.* Swept off herbage, Chale Chine (Donisthorpe); one on a flower, Priory fields, Newport (Morey).

Serica brunnea, *L.* A male and female by grubbing at roots of herbage at foot of cliffs, Sandown, Aug. (Newbery).

Rhizotrogus solstitialis, *L.* (*Amphimallus solstitialis*, *L.*). Very plentiful in early summer flying about hedges at dusk (Morey); Pan Down, Aug. (Butler); Freshwater (Holland); &c.

Melolontha vulgaris, *F.* Common in May and gen. dist.

Phyllopertha horticola, *L.* On Herb Gerarde, &c., Marvel Copse, June and July (Morey).

Cetonia aurata, *L.* St. Helens (Holland); one specimen, Bonchurch (Mrs. Steeple).

SERRICORNIA

BUPRESTIDAE

Agrilus laticornis, *Ill.* One female in Haven Street woods (Morley).

Aphanisticus pusillus, *Ol.* Carisbrooke Castle (Fowler, B.C.).

This record possibly refers to *A. emarginatus*.

A. emarginatus, *Ol.* First taken in Britain by sweeping rushes in flower in Parkhurst Forest, in August, 1903, more than 200 specimens being then captured (Donisthorpe); subsequently in numbers by other collectors.

EUCNEMIDAE

Throscus dermestoides, *L.* Marvel Copse, near Newport (Morley); Chale (Donisthorpe).

T. carinifrons, *Bonv.* Newport, Aug. (Butler).

T. obtusus, *Curt.* One specimen by sweeping, Gurnard Bay, June (Morey); not uncommon in dead hedge, Sandown, Aug. (Donisthorpe).

ELATERIDAE

Lacon murinus, *L.* Rather common by sweeping herbage: Sandown, Newport, St. Helens, Shanklin, &c.

Melanotus rufipes, *Hbst.* One specimen in rotten tree, Marvel Copse, Dec. (Morey); St. Helens (Holland).

Athous longicollis, *Ol.* By sweeping herbage, Gurnard Bay, June; also St. Boniface Down, July (Morey); both sexes by sweeping, Blackgang, July (Donisthorpe).

A. haemorrhoidalis, *F.* On brambles, &c., Marvel Copse, June (Morey); near Shanklin (Poole).

Adrastus limbatus, *F.* By sweeping, Marvel Copse, June; also at Bembridge, June (Morey).

Agriotes sputator, *L.* By sweeping, Gurnard Bay and Sandown, June; also at Newport, May (Morey).

A. lineatus, *L.* St. Helens (Holland).

A. sordidus, *Ill.* A salt-marsh species: under stones, Cowes (J. J. Walker).

A. pallidulus, *Ill.* By sweeping, Marvel Copse, June; also at St. Boniface Down, June (Morey); Shanklin (Poole); Bordwood Copse, May (Taylor).

Dolopius marginatus, *L.* One specimen on buttercup, Marvel Copse, June (Morey); Shanklin (Poole); Bordwood Copse, May (Taylor).

Corymbites castaneus, *L.* Very rare in Britain: one dead specimen picked up on shore, Sandown (Ellis); one specimen taken near Shanklin (Poole).

C. bipustulatus, *L.* (*Selatosomus bipustulatus*, *L.*). One specimen, exact locality not noted (Morey).

DASCILLIDAE

Dascillus cervinus, *L.* One specimen among nettles, Ventnor, June (Morey).

HELODIDAE

Helodes minuta, *L.* Rather common by sweeping hedge-banks: Luccombe, Totland, Bembridge, Ventnor, &c.

Cyphon nitidulus, *Thoms.* (*Paykulli*, *Guér.*). Rather common by sweeping hedge-banks: Brading, Brighstone, Merston, &c.

C. variabilis, *Thunb.* Rookley Wilderness, Aug. (Morey); Sandown (Taylor).

C. pallidulus, *Boh.* (*ochraceus*, *Steph.*). Near Shanklin (Poole).

Scirtes hemisphaericus, *L.* Common on rushes in swamp near Freshwater Station, also at Sandown (Donisthorpe); Luccombe, Aug. (Butler).

CANTHARIDAE

Lampyris noctiluca, *L.* Rather common: Ventnor, Blackgang, Parkhurst, Carisbrooke, Gurnard, &c. July and Aug.

Telephorus fuscus, *L.* (Genus *Cantharis* in *Eur. Cat.*). St. Helens (Holland).

T. rusticus, *Fall.* Common in hedges about Newport, Sandown, &c., in June (Morey).

T. pellucidus, *F.* One specimen by sweeping, Newport, June (Morey).

T. nigricans, *Müll.* Marvel Copse, June (Morey).

T. nigricans var. discoideus, *Steph., nec Ahr.* Near Shanklin (Poole).

T. lituratus, *Fall.* (*rufa*, *L. var. liturata*, *Fall.*). Common and gen. dist.: Brading, Carisbrooke, Luccombe, Gurnard Bay, &c. June.

T. bicolor, *F.* Rather common: Marvel Copse, Gurnard, Niton, Shanklin, Godshell, &c. June and July.

T. haemorrhoidalis, *F.* One specimen by sweeping, Sandown, June (Morey); Bordwood Copse, May (Taylor).

T. oralis, *Germ.* (*lateralis*, *L.*). Brook, June (Donisthorpe); Redeliff, Sandown (Morley); Sandown (Taylor); St. Helens (Holland).

T. flavilabris, *Fall.* (*fulvicollis*, *F. var. flavilabris*, *Fall.*). Rather common: Gurnard, Yarmouth, Newport, Parkhurst, Bembridge, &c. June.

Rhagonycha fulva, *Scop.* Abundant everywhere.

R. pallida, *F.* (*lignosa*, *Müll.*). Marvel Copse and Ventnor in June (Morey); near Shanklin (Poole); Bordwood Copse, May (Taylor).

Malthinus punctatus, *Four.* (*flaveolus*, *Payk.*). By sweeping and beating: Bembridge, June; also Marvel Copse, June (Morey); Blackgang (Donisthorpe).

M. fasciatus, *Ol.* Beaten off tree, Marvel Copse, June (Morey); Blackgang (Donisthorpe).

M. balteatus, *Suff.* Marvel Copse and Luccombe, Aug. (Butler); Blackgang (Donisthorpe).

Malthodes marginatus, *Lat.* By beating and sweeping: Newport, Parkhurst, Marvel Copse, June (Morey).

M. mysticus, *Kies?* By sweeping in meadow; also in garden, Newport, July (Morey).

M. minimus, *L.* Common about Newport in July; also at Ventnor, June (Morey); St. Helens (Holland).

Drilus flavescens, *Geoff.* The male common by sweeping, &c., and gen. dist.

Malachius aeneus, *L.* One specimen by sweeping in a field, Newport (Morey).

M. bipustulatus, *L.* Not uncommon near Shanklin (Poole).

M. viridis, *F.* By sweeping, Brading, June (Morey); St. Helens (Holland).

M. marginellus, *Ol.* Abundant at Steephill Cove (Guyon).

Anthocomus fasciatus, *L.* On flowers of *Syringa* in garden, Newport, June; also in meadow, Newport, May (Morey).

Dasytes aerosus, *Kies.* One specimen by sweeping, Marvel Copse, June (Morey); Parkhurst (Elliott).

Psilothrix nobilis, *Ill.* (cyaneus, *Ol.*). Common and gen. dist. on flowers on the coast, especially in the south of the Island.

CLERIDAE

Opilio mollis, *L.* In field, Newport, July; also in timber yard, Newport, July, and in office, Aug. (Morey).

Necrobia violacea, *L.* Beaten from oak in Rookley Wilderness, Sept. (Morey); Sandown (Taylor).

PTINIDAE

Ptinus fur, *L.* On wall in house, Newport, Jan. (Morey); St. Helens (Holland); Sandown (Taylor).

Niptus hololeucus, *Fald.* Several specimens in office, Newport, Oct. (Morey); Freshwater (Holland); Sandown, in shops (Taylor).

ANOBIIDAE

Hedobia imperialis, *L.* Flying in field in the evening, Newport, May (Morey); Freshwater (Donisthorpe).

Priobium castaneum, *F.* (excavatum, *Kugel.*). In old hedges and on the wing: Newport, Carisbrooke, the Undercliff, Sea View, &c.

Anobium domesticum, *Four.* (striatum, *Ol.*). Common and gen. dist.

A. fulvicorne, *Sturm.* By sweeping, Newport, June (Morey).

Ernobius mollis, *L.* One specimen in timber yard, Newport, July (Morey); beaten from hedge, Newport, Aug. (Butler).

Ptilinus pectinicornis, *L.* Several specimens mining an oak post in timber yard, Newport, July (Morey).

Ochina hederæ, *Müll.* (ptinoides, *Marsh.*). In old ivy.—Merston (Morley); Newport (Morey); Blackgang (Donisthorpe); Pelham Wood and Ryde (Guyon); beaten from hedge, Newport, Aug. (Butler).

LYCTIDAE

Lyctus canaliculatus, *F.* (linearis, *Goeze*). One specimen in timber yard, Newport, June (Morey).

L. brunneus, *Steph.* One specimen on a deal in timber yard, Sept. (Morey).

CISIDAE

Cis boleti, *Scop.* Common and gen. dist.

C. villosulus, *Marsh.* (setiger, *Mell.*). In rotten posts, Ventnor (Sharp).

C. alni, *Gyll.* Calbourne (Morley).

C. nitidus, *Hbst.* In numbers in tree fungus, Marvel Copse, Oct. (Morey).

C. vestitus, *Mell.* Plentiful in dry fungus growing on an old oak post, Newport, June (Morey).

Ennearthron cornutum, *Gyll.* In numbers in large fungus on decayed tree, Yarmouth, Aug. (Newbery).

Octotemnus glabriculus, *Gyll.* I. of Wight; precise locality not noted (Butler).

PHYTOPHAGA

CERAMBYCIDAE

Aromia moschata, *L.* On trunks of willows, Newport (Morey).

Hylotrupes bajulus, *L.* A single specimen in a shop window, Sandown (Taylor).

Callidium variabile, *L.* (*Phymatodes testaceus*, *L.*). Freshwater (Holland).

C. alni, *L.* (*Phymatodes alni*, *L.*). Found in hurdles, fagots, &c.: one specimen, locality not noted (Morey).

C. sanguineum, *L.* (*Pyrrhidium sanguineum*, *L.*). One specimen (probably introduced) on oak in timber yard, Newport, April 1885 (Morey).

Clytus arietis, *L.* Frequent in summer on flowers or flying in gardens, Newport; also in timber yard, Newport, in May and June (Morey).

Gracilia minuta, *F.* In dead hedges; also breeds in old hampers and the like: Sea View (Holland).

Rhagium inquisitor, *F.* (*mordax*, *De G.*). In timber yard, Newport, March to June (Morey).

R. bifasciatum, *F.* In plenty on fir stumps, Parkhurst Forest (Donisthorpe); in decayed trunk, Marvel Copse; also in timber yard, Newport (Morey).

Toxotus meridianus, *Panz.* (*Stenochorus meridianus*, *L.*). One specimen on a tree trunk, Stenbury Farm (Morey); one specimen, Yarmouth (Elliott).

Leptura fulva, *De G.* Flying in timber yard, Newport, July (Morey).

L. livida, *F.* Common and gen. dist.

Strangalia quadrifasciata, *L.* Parkhurst (Fowler, B.C.).

S. armata, *Hbst.* (*maculata*, *Poda*). Not uncommon on flowers in garden, Newport, July (Morey); near Shanklin (Poole); Sea View (Holland).

Grammoptera ruficornis, *F.* On hawthorn blossom, Newport, May (Morey); near Shanklin (Poole); Sea View (Holland); Bordwood Copse, May (Taylor).

Liopus nebulosus, *L.* On dead branches, &c.: Luccombe Chine (Fowler, B.C.).

Pogonochaerus bidentatus, *Thoms.* (hispidulus, *Pill.*). Usually in fagots and dead hedges: shaken from apple tree, Shide, Oct. (Morey); Yaverland (Taylor); near Shanklin (Poole).

P. dentatus, *Four.* (hispidus, *L.*). Ventnor, May (Fowler).

Monochamus sartor, *F.* Two specimens on a stack of deals in timber yard, Newport, Aug. 1884 (Morey).

BRUCHIDAE (LARIIDAE)

Bruchus cisti, *F.* (*Bruchidius unicolor*, *Ol.*). In plenty on flowers of *Helianthemum*, downs near Freshwater (Donisthorpe); Sandown (Elliott).

B. rufimanus, *Boh.* (*Laria rufimanus*, *Boh.*). Among Egyptian beans in a corn shop, Newport, in great numbers (Morey).

B. loti, *Payk.* (*Laria loti*, *Payk.*). Very common by sweeping and gen. dist.

B. villosus, *F.* (*Bruchidius cisti*, *F.*). I. of Wight (Fowler, B.C.).

CHRYSOMELIDAE

Donacia versicolorea, *Brahm.* On *Potamogeton*, pond near Heytesbury Farm, Aug. (Butler).

N.B. All the species of *Donacia* are found on aquatic plants about mid-summer.

D. limbata, *Panz.* (*marginata*, *Hoppe*). Near Sandown Waterworks, June (Taylor).

D. bicolora, *Zsch.* In plenty near Sandown Waterworks, June (Taylor, and Fowler, B.C.).

D. thalassina, *Germ.* On rushes near pond, Heytesbury Farm, Parkhurst (Morey).

D. simplex, *F.* Margins of pond, Heytesbury Farm, May (Morey); near Sandown (Taylor).

D. vulgaris, *Zsch.* Plentiful in marshes near St. Urian's Copse and near Sandown, June (Taylor).

D. discolor, *Panz.* (*Plateumaris discolor*, *Panz.*). Swamp in Rookley Wilderness, Aug. (Morey); on reeds, Chale Chine (Donisthorpe).

Lema cyanella, *L.* (*puncticollis*, *Curt.*). On various thistles in damp places.—By sweeping herbage near copse, Bembridge, June (Morey); Niton (Sharp).

L. lichenis, *Voet.* (*cyanella*, *L.*). On *Dactylis glomerata* and other grasses.—Rather common: Brading, Gurnard, Newport, Sandown, &c.

L. melanopa, *L.* On various grasses.—Chale (Sharp).

Clythra quadripunctata, *L.* Near Shanklin (Poole).

Cryptocephalus bipunctatus, *L.* On willow, birch, oak, &c.—In some numbers, Niton, July (Donisthorpe).

C. bipunctatus var. **lineola**, *F.* On a shrub, the Undercliff, St. Lawrence, June (Morey).

C. aureolus, *Suff.* Dry places on flowers of *Thrincia* and other Compositae.—Frequent on flowers of *Hieracium* on chalk downs in the south of the Island (Morey); common near Shanklin (Poole).

C. moraei, *L.* On various species of *Hypericum*.—Chalk downs, Bembridge, July (Champion); Ryde (Guyon); Whitecliff (Holland).

C. bilineatus, *L.* On flowers of *Leucanthemum*, &c.—Common and gen. dist. on coast.

C. bilineatus var. **armeniacus**, *Fald.* With the above, Niton (Sharp).

C. fulvus, *Goeze.* On and under *Thymus*.—Common and gen. dist.

C. pusillus, *F.* On young birches in woods; also by sweeping heather.—Bembridge, June (Morey); Parkhurst Forest (Donisthorpe).

C. labiatus, *L.* On birch and other trees and bushes.—Haven Street woods (Morley).

Lamprosoma concolor, *Sturm.* By sweeping herbage, Luccombe Chine, Aug. (Newbery); Bowcombe Down, June; also Ventnor, July, and Newport, July (Morey).

Timarcha tenebricosa, *F.* On *Galium mollugo* and *aparine*.—Common on chalk downs and hedge-banks (Morey).

T. violacea-nigra, *De G.* (*coriaria*, *Laich.*). On *Galium*, especially *G. verum*.—Common: Pan Down, Niton, St. Boniface Down, Freshwater, &c.

Chrysomela marginalis, *Duft.* On *Hypericum*.—I. of Wight, but no locality given (Guyon).

C. Banksi, *F.* On Labiatae.—Common and gen. dist.

C. staphylaea, *L.* Food plant unknown. Marvel Copse, June; also Luccombe Chine, June (Morey); near Shanklin (Poole).

C. polita, *L.* On *Lychnis*, Marvel Copse, June; also on *Mentha*, Rowborough Down, July; and at Loverstone in May (Morey); Sandown (Taylor).

C. orichalcea, *Müll.* Several specimens on flowers of Umbelliferae in copse near Godshill, July (Morey); Sandown (Taylor).

C. haemoptera, *L.* On grass, Pan Down, Sept. (Morey); Blackgang, Chale, Yarmouth (Donisthorpe).

C. goettingensis, *L.* Two specimens on grass, St. George's Down, Oct. (Morey); Niton (Sharp); near St. Lawrence (Guyon).

Phytodecta olivacea, *Forst.* On *Ulex*.—Bordwood Copse, May (Taylor).

Gastroidea viridula, *De G.* On docks.—St. Helens (Holland).

G. polygoni, *L.* On *Polygonum aviculare*.—Common and gen. dist.

Phaedon tumidulus, *Germ.* On flowers of *Heracleum*.—By sweeping herbage, Undercliff, June (Morey); at roots of plants, Sandown, Aug. (Butler); Niton (Sharp); Yaverland (Taylor).

P. armoraciae, *L.* On *Veronica beccabunga*, &c.—By sweeping on banks of Yar, Brading, Aug. (Butler); pond near waterworks, Sandown, May (Taylor).

P. cochleariae, *F.* On *Nasturtium officinale* and other Cruciferae.—On water-cress, Newport, May (Morey); near Sandown (Taylor); Bembridge (Holland).

Phytodecta vulgatissima, *L.* (*Phyllodecta vulgatissima*, *L.*). On various shallows.—Redcliff, Sandown (Morley).

P. cavifrons, *Th.* Abundant on White Poplars near Sandown, Aug. (Donisthorpe).

Hydrothassa marginella, *L.* On *Ranunculus*.—By sweeping herbage, Brading, June (Morey).

Prasocuris junci, *Brahm.* On *Veronica beccabunga*.—By sweeping herbage near stream, Carisbrooke, June (Morey); Ventnor (Guyon).

P. phellandrii, *L.* On Umbelliferae in ditches.—Sides of pond, Heytesbury Farm, Aug. (Butler); Sandown (Taylor).

Luperus nigrofasciatus, *Geoze* (*circumfusus*, *Marsh.*). On *Ulex* and *Genista*.—Redcliff, Sandown (Taylor); on furze, Pan Down, Aug. (Butler); Chale Chine (Donisthorpe); Sandown, July (Champion).

L. rufipes, *Scop.* (*longicornis*, *F.*). On birch, alder, and other trees and bushes.—Sandown (Taylor).

Lochmea crataegi, *Forst.* On Hawthorn flowers.—Ventnor, May (Fowler).

Galerucella tenella, *L.* On flowers of *Spiraea*, &c., at sides of ditches.—By sweeping herbage, Rookley Wilderness, Sept. (Morey).

Adimonia tanacetii, *L.* On *Achillea*, &c.—Two specimens in timber yard, Newport, July and Sept.; also on the turf, Apes Down, Sept. (Morey); common in autumn at "Limpet Run," near Sandown (Taylor).

Sermyla halensis, *L.* On *Galium mollugo* and *verum*.—On hedge-banks, Carisbrooke, Shide, Pan Down, &c., in autumn (Morey); St. Helens (Holland).

Longitarsus pulex, *Schrank* (*obliteratus*, *Rosh.*). Roots of *Thymus* on chalky soil.—High Down, Freshwater, Aug. (Newbery & Butler).

L. dorsalis, *F.* On *Senecio vulgaris* and other species of *Senecio*.—Sandown (Blatch); common on Rew Down, Ventnor, April (Fowler, B.C.).

L. luridus, *Scop.* Common and gen. dist.

L. suturellus, *Duft.* On *Senecio jacobaea*, &c.—Niton (Sharp); Sandown (Taylor); abundant in the I. of Wight (Gorham).

L. suturellus var. **fuscollis**, *Steph.* On *Senecio*.—By sweeping at Sandown and Gurnard Bay in June (Morey).

L. atricillus, *L.* Very common by beating hedges: Newport, Carisbrooke, Freshwater, &c.

L. melanocephalus, *All.* (*De Geer*?). On various species of *Plantago*.—Common and gen. dist.

L. membranaceus, *Foud.* On *Teucrium scorodonia*.—By sweeping, Parkhurst Forest, Sept. (Morey & Holland).

L. exoletus, *L.* On *Echium vulgare*, &c.—By sweeping in field, Newport, July (Morey); Arreton Down (Morley); Niton (Donisthorpe).

L. pusillus, *Gyll.* (*pratensis*, *Panz.*). On various species of *Plantago*.—Common and gen. dist.

L. Waterhousei, *Kuts.* Near Brading (Fowler).

L. jacobaeae, *Wat.* On *Senecio jacobaea*.—Common and gen. dist.

L. ochroleucus, *Marsh.* Food plant unknown. By sweeping, Bembridge, June (Morey); Pan Down, Aug. (Butler).

L. gracilis, *Kuts.* On *Senecio jacobaea*.—By sweeping in field, Newport, July (Morey); Niton (Sharp).

L. laevis, *Duft.* Luccombe, Aug. (Butler); Sandown (Newbery); Parkhurst (Holland).

It is uncertain whether some of these records do not apply to *L. aeruginosus*, *Foud.*

L. pellucidus, *Foud.* I. of Wight (Fowler, B.C.).

Haltica lythri, *Aubé.* On *Lythrum salicaria*.—Ryde (Fowler, B.C.).

H. coryli, *All.* (*brevicollis*, *Foud.*). On *Corylus*.—On flower in garden, June (Morey).

H. oleracea, *L.* Found on a great variety of plants including *Erica*.—Common and gen. dist.

Hermeophaga mercurialis, *F.* On *Mercurialis perennis*.—Pelham Wood and Luccombe Copse (Guyon); I. of Wight (Fowler, B.C.).

Phyllotreta nodicornis, *Marsh.* On *Reseda lutea* and *luteola*.—Ventnor, April (Fowler & Guyon).

P. nigripes, *F.* On many species of Cruciferae.—Rather common, Newport (Butler & Morey); Sandown (Elliott & Taylor).

P. consobrina, *Curt.* On Cruciferae, especially the cultivated species.—Common: Newport, St. Helens, Sandown, Yarmouth, &c.

P. atra, *F.* On Cruciferae.—Very common and gen. dist.

P. cruciferae, *Goeze.* On *Brassica* and other Cruciferae.—On cabbages, Newport, Aug. (Morey); Sandown (Elliott); common on Arreton Down (Morley).

P. vittula, *Redt.* On various Cruciferae.—By sweeping, Marvel Copse, April; also at Newport, May (Morey).

P. undulata, *Kuts.* On Cruciferae.—Common and gen. dist.

Aphthona lutescens, Gyll. On *Spiraea ulmaria*, &c.—Near Brading (Fowler, B.C.).

A. nonstriata, Goeze (caerulea, Geoff.). On *Iris pseudacorus*.—By sweeping herbage near stream, Rookley Wilderness, Sept. (Morey); meadows, Ryde (Guyon).

A. venustula, Kuts. On *Euphorbia sylvatica*.—Plentiful on *Euphorbia* on the Undercliff, Ventnor, April (Fowler).

A. atrocaerulea, Steph. (cyanella, Redt.). On *Euphorbia*.—Not uncommon: Shalfleet, Pelham Wood, Ventnor, Newport, &c.

A. herbigrada, Curt. On *Helianthemum*, &c.—Very abundant on High Down, Freshwater, Aug. (Newbery); cliffs and downs, Ventnor (Guyon).

Batophila rubi, Payk. On *Rubus*.—Amongst grass, Pan Down, Dec. (Morey).

B. aerata, Marsh. On *Rubus*.—Very common by beating hedges: abundant at Carisbrooke, Oct. (Newbery); Ventnor, April (Fowler & A. Ford); Sandown and Bembridge, May (Donisthorpe).

Sphaeroderma testaceum, F. (rubidum, Graëlls). On various *Carduaceae*.—Luccombe Chine, Aug. (Newbery); one specimen by sweeping, Pan Down, June (Morey).

S. cardui, Gyll. (testaceum, F.). On *Carduaceae*.—One specimen, locality not noted (Morey).

Mniophila muscorum, Koch. Abundant in moss, Shanklin Copse (Guyon).

Podagricra fuscipes, L. On *Malvaceae*.—Plentiful on leaves of mallow, Ventnor, May; also in garden, Ventnor, June (Morey); Ventnor (Guyon).

Mantura rustica, L. On *Rumex*.—Sand-pit, Marvel Copse, April, and by sweeping near same place, June (Morey); Luccombe, Aug. (Butler); Ventnor (Guyon).

M. obtusata, Gyll. On *Rumex*.—On the downs, Ventnor (Guyon).

M. Matthewsii, Curt. On *Helianthemum vulgare*.—Common on High Down, Freshwater, Aug. (Newbery).

Ochrosis salicariae, Payk. (*Lythraria salicariae*, Payk.). On *Lythrum salicaria*.—Wet spot near Sandown (Ellis).

Crepidodera transversa, Marsh. On *Cirsium*.—By sweeping herbage, Brading, June (Morey).

C. ferruginea, Scop. On *Cirsium*.—By sweeping herbage, Undercliff, June; also at Newport, July (Morey).

C. rufipes, L. (*Derocrepis rufipes*, L.). On *Vicia sepium* and other *Leguminosae*.—Near Shanklin (Poole).

C. ventralis, Ill. (*Ochrosis ventralis*, Ill.). On *Solanum Dulcamara*.—St. Helens (Holland); on *Matricaria*, Sandown (Fowler, B.C.).

C. helxines, L. (*Chalcoides aurea*, Geoff.). On *Populus nigra* and other *Salicaceae*.—In swampy place, Rookley Wilderness, Aug. (Morey).

C. aurata, *Marsh.* On Salicaceae.—In numbers on willows on the shore, Luccombe, May; also at Bembridge, June (Morey); on sallows, Luccombe, Aug. (Butler); near Shanklin (Poole).

Hippuriphila Modeeri, *L.* On various species of *Equisetum*.—Totland Bay, Aug. (Butler).

Chaetocnema subcoerulea, *Kuts.* On rushes.—In marshy hollow near Brading, May (Fowler); Parkhurst (Holland); Luccombe, Aug. (Butler).

C. hortensis, *Geoff.* Very common on various grasses, and gen. dist.

C. Sahlbergi, *Gyll.* Newchurch (Guyon).

Probably in error for *subcoerulea*, *Kuts.*

Plectroscelis concinna, *Marsh.* (*Chaetocnema concinna*, *Marsh.*). On various species of *Polygonum*.—Common and gen. dist.

Psylliodes napi, *Koch.* On *Nasturtium officinale*.—By sweeping herbage, Marvel Copse, June (Morey).

P. cuprea, *Koch.* On *Sisymbrium officinale*.—One specimen on wall of Coastguard Station, Sandown (Taylor); Freshwater, Sandown, &c. (Donisthorpe).

P. affinis, *Payk.* On various species of *Solanum*.—Near Sandown, Sept. (Beare).

P. dulcamarae, *Koch.* On *Solanum Dulcamara*.—Ventnor (Ellis & Guyon).

P. chalcomera, *Ill.* (*hyoscyami*, *L. var. chalcomera*, *Ill.*). On *Carduus nutans* and *Cirsium*.—Freshwater, July (Champion); on thistles, near Blackgang (Donisthorpe); Pan Down and Parkhurst Forest, Aug. (Butler).

P. picina, *Marsh.* In marshy places on *Cirsium palustre*.—Recorded by Guyon without locality.

Cassida sanguinolenta, *F.* On *Achillea millefolium*.—Near Sandown (Taylor).

C. vittata, *Vill.* On *Atriplex*, *Salicornia*, &c.—St. Helens (Holland).

C. nobilis, *L.* On *Silene inflata*.—Common at roots of plants on shore, Bembridge (Ellis).

C. flaveola, *Thun.* On *Stellaria*, &c.—Newport, May (Morey); Niton (Sharp); Shalfleet (Morley); Brook (Donisthorpe).

C. viridis, *F.* (*rubiginosa*, *Müll.*). On *Carduaceae*.—Pan Down, Aug. (Butler); Ventnor, June (Morey); near Shanklin (Poole).

C. hemisphaerica, *Hbst.* On *Silene inflata*, &c.—A single example, Sandown, July (Champion).

HETEROMERA

TENEBRIONIDAE

Blaps mucronata, *Lat.* In a corn shop, Newport, May and Aug. (Morey); under stones in a yard, Sandown (Taylor).

Heliopathes gibbus, *F.* (*Phylan gibbus*, *F.*). Under plants on coast: Redcliff, Sandown (Taylor); St. Helens (Holland).

Hopatrum sabulosum, *Gyll.* Sandy places on coast: not uncommon near Culver (Ellis); near Sandown (Holland & Taylor).

Microzoum tibiale, *F.* (*Melanimon tibiale*, *F.*). At roots of plants on coast.—St. Helens (Holland).

Phaleria cadaverina, *F.* Sandy places on coast, at roots of low plants: in profusion on Sandown beach, July and Aug. (Champion, Newbery, &c.); St. Helens (Holland).

Scaphidema metallicum, *F.* By beating a dead hedge, Sandown, Aug. (Donisthorpe).

Tenebrio molitor, *L.* In corn shop, Newport, Sept.; also flying in garden, Aug. (Morey).

T. obscurus, *F.* In corn shop, Newport, Aug. (Morey); in street, Newport, Aug. (Butler); in bakehouse, Sandown (Taylor).

Palorus depressus, *Hbst.* Under bark, locality not recorded (Guyon).

It is uncertain to which species this record refers.

Helops coeruleus, *L.* Frequent in timber yard, hiding in stacks of scantling or amongst loose bark, June and July (Morey); under bark of palings, Yarmouth (Beare); common at sugar near Sandown (Taylor).

H. striatus, *Four.* (*laevioctostriatus*, *Goeze*). At roots of trees and under bark: beneath bark of fir trees and under dead leaves, Marvel Copse, April (Morey); near Shanklin (Poole); very common at Sandown (Taylor).

LAGRIIDAE

Lagria hirta, *L.* On leaves of brambles, Marvel Copse, Aug.; also on herbage near shore, Bembridge, June (Morey); Redcliff, Sandown (Morley).

CISTELIDAE

Cistela murina, *L.* By sweeping hedge-banks in June: Carisbrooke, Brading, Undercliff, Shanklin, Sandown, &c.

Cteniopos sulphureus, *L.* On flowers on coast: common on chalk downs at Freshwater, July and Aug. (Champion, Donisthorpe, Holland, Newbery, &c.).

MELANDRYIDAE

Conopalpus testaceus, *Ol.* One specimen on a flower in a copse, Godshill, July (Morey).

Melandrya caraboides, *L.* Frequent on various felled trees in timber yard, Newport, May and June (Morey).

Anisoxya fuscula, *Ill.* In a puddle near hedge, one specimen, Freshwater, also by beating dead hedge, Sandown, Aug. (Donisthorpe).

Abdera bifasciata, *Marsh.* Beaten from stumps of broken-off boughs of young oaks, Sandown, July (Champion).

Phloeotrya rufipes, *Gyll.* One specimen in timber yard, Newport, July (Morey).

PYTHIDAE

Salpingus aeratus, *Muls.* (aeneus, *Steph.*). Beaten from hedge, Newport, Aug. (Butler).

S. ater, *Payk.* (*teste Donisthorpe*). Dead hedges, by beating, Blackgang (Donisthorpe).

Lissodema quadripustulata, *Marsh.* Usually in dead hedges: one specimen by sweeping grass, Ventnor, Sept. (Beare).

Rhinosimus viridipennis, *Steph.* Under bark, Steephill (Guyon); dead hedges, Sandown (Donisthorpe).

R. planirostris, *F.* Beaten from hedges, Newport, Aug. (Butler); dead hedges, Sandown (Donisthorpe).

OEDEMERIDAE

Oedemera nobilis, *Scop.* On flowers: common and gen. dist., especially on the southern downs.

Oe. lurida, *Marsh.* St. Helens (Holland).

Oncomera femorata, *F.* Common at sugar near Sandown (Taylor); flying near ivy, Ventnor (Guyon); several specimens near Shanklin on ivy blossom in late autumn (Poole).

Nascerdes melanura, *Schmidt.* On posts and timber on the coast: Totland Bay (Donisthorpe); St. Helens (Holland).

Ischnomera coerulea, *L.* St. Helens (Holland).

PYROCHROIDAE

Pyrochroa serraticornis, *Scop.* Very frequent in timber yard, Newport, especially amongst refuse timber that was beginning to decay, June; also one specimen in lane, Marvel, June (Morey); Shanklin (Poole).

MORDELLIDAE

Mordellistena pumila, *Gyll.* By sweeping herbage and flowers: Steephill, Ventnor (Morey); by sweeping, Parkhurst Forest, Aug. (Butler).

M. parvula, *Gyll. var. inaequalis*, *Muls.* By sweeping, rare, Sandown, July (Champion); Chale Chine, also at Niton, July (Donisthorpe).

Anaspis frontalis, *L.* On hawthorn, Newport, May; also on *Syringa* in garden, Newport, June (Morey); Niton (Sharp); Shanklin (Poole); Sandown (Taylor).

A. pulicaria, *Costa.* On hawthorn blossom, Newport, May; also swept at Ventnor, June (Morey); near Shanklin (Poole).

A. ruficollis, *F.* On hawthorn, *Syringa*, &c., at Newport, May and June (Morey).

A. subtestacea, *Steph.* By sweeping in field, Newport, June (Morey); hedges, Newport, Aug. (Butler).

A. maculata, *Geoff.* Rather common and gen. dist.: Marvel Copse, Newport, Shanklin, Sandown, &c.

ANTHICIDAE

Notoxus monoceros, *L.* Sandy places, Ryde and Sandown (Guyon); St. Helens (Holland & Taylor).

Anthicus humilis, *Germ.* In salt marshes, running on the mud, rather common: Ryde, Yarmouth, Bembridge, St. Helens, &c.

A. salinus, *Crotch.* Salt marshes, St. Helens (Holland).

A. floralis, *L.* By sweeping in field, Newport, May and June; also in timber yard (Morey); Sandown (Taylor); Newport, Aug. (Butler).

A. floralis *var. quisquilius*, *Thoms.* (*var. formicarius*, *Goeze*). By sweeping in garden, Newport (Morey).

A. instabilis, *Schmidt.* In salt marshes and under tidal refuse: salt marsh, Yarmouth, Aug. (Butler); Bembridge, Sept. (Beare); Steephill Cove (Guyon).

A. angustatus, *Curt.* Salt marshes under seaweed: on the beach, Ventnor (Fowler, B.C.); in shingle at waterfall, Steephill (Guyon).

A. tristis, *Schmidt var. Schaumi*, *Woll.* Bembridge (Donisthorpe); near Ventnor (Guyon).

A. antherinus, *L.* On ground in garden, Newport, Sept. (Morey); Sandown (Taylor).

XYLOPHILIDAE

Xylophilus oculatus, *Gyll.* (*pygmaeus*, *De G. var. oculatus*, *Panz.*). Beaten from hedge, Newport, Aug. (Butler).

MELOIDAE

Meloe proscarabaeus, *L.* Frequent on paths and hedge-banks about Newport, April and May (Morey); Shanklin (Poole).

M. proscarabaeus *var. cyaneus*, *Muls.* On a grassy spot at Alverstone (Ellis).

Lytta vesicatoria, *L.* One male in a lane, Whitwell, July, 1906 (Bryant); one male on *Cicuta virosa* flowers, near an ash, Shalfleet, June, 1907 (Morley); one specimen on ground near railway station, Sandown (Taylor). It appears to have been a common insect in the Island formerly: "sometimes abundant on privet in July, Newchurch" (Guyon); "numerous specimens taken (in 1837-8) by myself at Ryde, and by others at Yarmouth" ("Flora Vectensis," by Dr. Bromfield, 1856).

RHYNCHOPHORA

PLATYRRHINIDAE

Brachytarsus fasciatus, *Forst.* (*Genus Anthribus*). Haven Street woods, by sweeping (Morley).

CURCULIONIDAE

Apoderus coryli, *L.* On *Corylus*.—Haven Street woods, June (Morley); Bordwood Copse, May (Taylor).

Bytiscus betuleti, *F.* (*betulae, L.*). On hazel, Shambler's Copse, Ryde (Guyon).

This record probably refers to *Deporaus betulae, L.*

Rhynchites aequatus, *L.* On *Crataegus*, &c.—Near Sandown (Taylor).

R. coeruleus, *De G.* On various Pomaceae.—Pelham Wood (Guyon).

R. minutus, *Hbst.* In woods on oak.—By sweeping, Marvel Copse; also at Gurnard, June (Morey).

R. pubescens, *F.* (*cavifrons, Gyll.*). On oak, birch, &c.—St. Helens (Holland).

Deporaus betulae, *L.* On birch, &c.—Bordwood Copse (Taylor).

See also *Bytiscus betuleti, F. ante.*

D. megacephalus, *Germ.* (*Rhynchites Mannerheimi, Hum.*). On *Betula*.—Beaten off tree, Marvel Copse, June (Morey).

Apion pomonae, *F.* On Leguminosae.—One specimen by sweeping herbage, the Undercliff, June (Morey).

A. craccae, *L.* On various *Viciae*.—I. of Wight (Fowler, B.C.).

A. subulatum, *Kirb.* On *Lathyrus pratensis*.—Common and gen. dist.

A. ulicis, *Forst.* On *Ulex europaeus*.—St. Helens (Holland); in plenty, Shide, Oct. (Newbery); Sandown (Taylor).

A. genistae, *Kirb.* On *Genista anglica* and *tinctoria*.—Not rare, Shalfleet, and Haven Street woods, June (Morley).

A. Kiesenwetteri, *Desb.* Very rare: hitherto only taken in Britain at Sandown on the 4th Aug. 1906 (Holland); and at Chattenden, Kent; it occurs on *Genista tinctoria* (E.M.M. xliii, 52).

A. malvae, *F.* On mallows.—Freshwater, Aug. (Butler & Newbery); St. Helens (Holland).

A. urticarium, *Hbst.* On *Urtica dioica*, &c.—I. of Wight (Fowler, B.C.).

A. miniatum, *Germ.* On various species of *Rumex*.—Very common and gen. dist.

A. haematodes, *Kirb.* (*frumentarium, Payk.*). On *Rumex acetosella*.—Beaten from hedge, Rookley Wilderness, Aug. (Morey); near Sandown (Taylor).

A. rubens, *Steph.* On *Rumex acetocella*.—At roots of grass near Sandown (Donisthorpe).

A. rufirostre, *F.* On mallows.—Rather common and gen. dist., June to Aug.: Freshwater, Ventnor, Shanklin, St. Helens, &c.

A. viciae, *Payk.* On *Vicia cracca*.—By sweeping, Bembridge, June (Morey); St. Helens (Holland); Thorness Bay (Fowler, B.C.).

A. difforme, *Germ.* On *Polygonum hydropiper*.—Newport, Aug. (Butler); Culver Cliffs, Sandown, Sept. (Beare).

A. dissimile, *Germ.* On *Trifolium arvense*.—Cliffs below battery, Redcliff, Sandown (Beare).

A. varipes, *Germ.* On *Trifolium*.—St. Helens (Holland); Niton (Sharp); near Alverstone (Beare); Newport (Morey); Sandown (Donisthorpe).

A. laevicolle, *Kirb.* Sandy places on coast: Ryde, Freshwater, Totland (Fowler, B.C.).

A. Schonherri, *Boh.* Sand-hills, &c., on coast: Brading (S. Stevens).

A. apricans, *Hbst.* A single specimen at Carisbrooke, Oct. (Newbery).

A. Bohemanni, *Thoms.* (*ononicola*, *Bach*). On *Ononis spinosa* and *reclinata*.—Ventnor, Sept. (Beare); Sandown (Donisthorpe); St. Helens (Holland); Freshwater, Aug. (Newbery).

A. assimile, *Kirb.* On *Trifolium*.—Very common and gen. dist.

A. trifolii, *L.* (*aestivum*, *Germ.*). On *Trifolium pratense*, &c.—In plenty at Alverstone, Sept. (Beare); Luccombe, Aug. (Newbery); Newport, Aug. (Butler); Bembridge (Holland).

A. dichroum, *Bedel* (*flavipes*, *Payk.*). Culver Cliffs, Sandown, Sept. (Beare).

A. nigritarse, *Kirb.* On various species of *Trifolium*.—Common and gen. dist.

A. confluens, *Kirb.* On *Matricaria*.—St. Helens (Holland); in profusion, Sandown (Fowler); Luccombe and Sandown, Aug. (Butler).

A. stolidum, *Germ.* On *Leucanthemum vulgare*.—I. of Wight (Fowler, B.C.).

A. sorbi, *F.* (*laevigatum*, *Payk.*). On *Matricaria* and other *Corymbiferae*.—Very rare: I. of Wight (Gorham); one male by sweeping near the Redoubt, Freshwater, Aug. (Donisthorpe); Totland Bay (S. Stevens); Pelham Wood (Guyon).

A. Hookeri, *Kirb.* On *Matricaria*, &c.—Common and gen. dist.

A. aeneum, *F.* On mallows.—Ventnor, May (Morey); Freshwater, Aug. (Butler); St. Helens (Holland).

A. radiolus, *Kirb.* On mallows.—Ventnor, May and June (Morey); St. Helens (Holland).

A. onopordi, *Kirb.* On *Onopordon* and other thistles.—Sandown, Aug. (Butler); Shide, Oct. (Newbery); near Shanklin (Poole).

A. carduorum, *Kirb.* On various *Carduaceae*.—Common and gen. dist. Brighstone, Blackgang, Yarmouth, Sandown, &c.

A. annulipes, *Wenck.* Very rare: one male and two females under thyme, top of the cliffs, Totland Bay, Aug. (Newbery); by sweeping, Parkhurst Forest (Power).

A. virens, *Hbst.* On *Trifolium*.—Common and gen. dist.

A. pisi, *F.* On *Vicia sepium* and other Leguminosae.—By sweeping, Brading, June; also at Newport, July (Morey); St. Helens (Holland).

A. aethiops, *Hbst.* On *Vicia sepium*.—Yarmouth (Elliott); Culver Cliffs, Sandown, Sept. (Beare); Arreton Down (Morley).

A. ebeninum, *Kirb.* On *Lotus*, &c.—I. of Wight (Fowler, B.C.); Sandown (Dollman).

A. filirostre, *Kirb.* On *Medicago lupulina*.—By sweeping lucerne, Ventnor, July (Donisthorpe).

A. striatum, *Kirb.* On *Ulex europaeus*.—Exact locality not noted (Morey); in profusion, Blackgang (Fowler).

A. immune, *Kirb.* On *Ulex nanus* and *Sarothamnus*.—I. of Wight (Fowler, B.C.).

A. ononis, *Kirb.* On *Ononis reclinata*, &c.—Culver Cliffs, Sept. (Holland & Beare); Marvel Copse, Aug. (Butler).

A. Spencei, *Kirb.* On *Vicia sepium* and *cracca*.—Thorness Bay (Fowler, B.C.).

A. ervi, *Kirb.* On *Lathyrus pratensis*, &c.—Common and gen. dist.: Marvel Copse, Sandown, Shanklin, Luccombe, Yarmouth, &c.

A. vorax, *Hbst.* On *Vicia cracca*, &c.—Parkhurst Forest, Aug. (Butler).

A. unicolor, *Kirb.* (platealea, *Germ.*). On *Vicia cracca*, *Lotus corniculatus*, &c.—Chale, July (Donisthorpe).

A. meliloti, *Kirb.* On species of *Melilotus*.—Cowes, Ryde, and Thorness Bay (Fowler, B.C.).

A. loti, *Kirb.* On *Lotus corniculatus*, &c.—Very common and gen. dist.

A. seniculum, *Kirb.* On *Trifolium pratense*, &c.—Common and gen. dist.

A. tenue, *Kirb.* On *Melilotus*.—Sandown, Totland Bay, and Luccombe, Aug. (Newbery); Niton (Sharp); St. Helens (Holland); on red clover, Alverstone (Beare).

A. simile, *Kirb.* On *Betula alba*.—Spring Vale (Morley).

A. pubescens, *Kirb.* On willows, &c.—By sweeping dry grass, edge of the cliffs, Ventnor, Sept. (Beare); by grubbing at roots of plants, foot of the cliffs, Sandown, Aug. (Newbery).

A. limonii, *Kirb.* On and under *Statice limonium* in salt marshes, Yarmouth, Aug. (Butler & Holland); salt marsh, Yarmouth, in plenty (Donisthorpe).

A. violaceum, *Kirb.* On *Rumex*.—Very common and gen. dist.

A. hydrolapathi, *Marsh.* On *Rumex hydrolapathum*.—St. Helens (Holland).

A. humile, *Germ.* (curtirostre, *Germ.*). On *Rumex*.—Rather common: Luccombe, Brighstone, Marvel Copse, Freshwater, &c.

Otiorhynchus fuscipes, *Walton*. I. of Wight (Fowler, B.C.).

O. atroapterus, *De G.* By grubbing at roots of plants, foot of cliffs, Sandown, Aug. (Newbery); St. Helens (Holland).

O. raucus, *F.* Under plants, &c.: Sandown (Guyon).

O. scabrosus, *Marsh.* At roots of *Daucus* and other plants on coast.—Newport (Sharp); Ventnor (Fowler); by sweeping herbage, Luccombe Chine, also at Ryde, Aug. (Newbery).

O. ligneus, *Ol.* Under plants at top of High Down, Freshwater, Aug. (Newbery); by grubbing, Culver Cliffs (Beare); by sweeping, Ventnor, June (Morey).

O. picipes, *F.* (*singularis*, *L.*). On *Crataegus*, &c.—Rather common and gen. dist.: Sandown, Shanklin, St. Helens, Marvel Copse, &c.

O. sulcatus, *F.* In gardens and by grubbing at roots of plants on coast; common: Newport, St. Helens, Shanklin, Sandown, &c.

O. ligustici, *L.* Very rare: at roots of *Anthyllis*, sides of cliff, Ventnor (S. Stevens); where the chalk joins the red sandstone, about a mile and a half east of Sandown, at roots of *Anthyllis* (Blatch & Fowler); among grass and by sweeping, Luccombe (Guyon).

O. rugifrons, *Gyll.* Roots of plants on cliffs, Totland Bay, Aug. (Newbery); Sandown, July (Champion).

O. rugifrons *var. ambiguus*, *Schön.* (*var. Dillwyni*, *Steph.*). Rather common, Sandown, April (Fowler).

O. ovatus, *L.* By grubbing, foot of cliffs, Sandown, Aug. (Newbery); St. Helens (Holland).

Peritelus griseus, *Ol.* (*sphaeroides*, *Germ.*). Extremely rare in Britain: Ventnor and Sandown (Wainwright and Sidebotham—doubtful records—see Fowler, B.C.).

Trachyploeus myrmecophilus, *Seidl.* "Mr. Gorham records it doubtfully from Freshwater" (Fowler, B.C.).

T. squamulatus, *Ol.* (Oliveri, *Bedel*). Not uncommon at roots of plantains and other low plants.—Sandown (Donisthorpe, Champion, Newbery, Beare, &c.); Ventnor, Sept. (Beare).

T. scaber, *L.* (*bifoveolatus*, *Beck*). Rather common under low plants on the sand: Sandown, Aug. (Butler, Champion, Donisthorpe, Newbery, &c.); cliffs, Ventnor (Sharp); Parkhurst Forest, Aug. (Butler).

T. scabriculus, *L.* Rather common at Sandown with the last species (Champion, Newbery, Taylor, &c.); Newport, Aug. (Butler).

T. spinimanus, *Germ.* Chalky places on cliffs, Ventnor (Guyon).

T. alternans, *Gyll.* Not very common, but gen. dist. under plants on the coast, June to Aug.: Sandown, Ventnor, Freshwater, Totland Bay, &c.

Cathormiocerus socius, *Boh.* Only found in Britain in the I. of Wight. Seventeen examples at roots of isolated plants (*Sonchus*, &c.) in clean sand at foot of cliffs near Sandown, July (Champion); also

taken by Donisthorpe and Fowler at the same place; Ventnor (Beare); roots of grass on sea cliffs, Sandown (Sharp); Whitecliff Bay, Aug. (Donisthorpe).

Caenopsis fissirostris, *Walt.* Newchurch (Guyon).

C. Waltoni, *Schön.* In company with *Cathormiocerus socius*, rare, Sandown, July (Champion); not uncommon in moss, Newchurch (Guyon).

Strophosomus coryli, *F.* On herbage, Marvel Copse, Aug.; also at Rookley Wilderness, Aug. (Morey); Bordwood Copse (Taylor).

S. capitatus, *De G.* On oaks, &c.—Shanklin (Holland); Bordwood Copse, May (Taylor).

S. retusus, *Payk.* On *Genista anglica*, &c.—One specimen, St. Boniface Down, June (Morey).

S. faber, *Hbst.* Under flints, top of High Down, Freshwater, Aug. (Newbery); in sand pockets on cliff, Blackgang and Chale (Donisthorpe); Niton (Sharp).

S. lateralis, *Payk.* On *Erica*.—Parkhurst Forest, Aug. (Butler).

Exomias araneiformis, *Schrank* (*Barypeithes araneiformis*, *Schrank*). In garden, Newport, on several occasions; also in timber yard, May (Morey); Nettlestone (Morley).

Sciaphilus muricatus, *F.* (*asperatus*, *Bons.*). On herbage, Marvel Copse, May (Morey).

Liophloeus nubilus, *F.* (*tessellatus*, *Müll.*). By sweeping, Bembridge and Ventnor, June (Morey); Sandown, July (Champion); near Shanklin (Poole).

Polydrosus cervinus, *L.* On birch.—By sweeping herbage, Marvel Copse, June (Morey); Bordwood Copse, May (Taylor).

P. confluens, *Steph.* On furze, Sandown, Aug. (Butler).

Phyllobius oblongus, *L.* On *Lychnis* in lane, Marvel, June (Morey).

P. pyri, *L.* On hawthorn, &c.—One specimen near Newport, June (Morey).

P. argentatus, *L.* On hawthorn, birch, &c.—By sweeping, Marvel Copse, June (Morey); Bordwood Copse, May (Taylor).

P. maculicornis, *Germ.* On *Salix*, &c.—By beating hawthorn, sweeping, &c., May (Morey).

P. pomonae, *Ol.* On *Salix capreae*, &c.—Very common in May and June on various flowers (Morey); near Shanklin (Poole); Blackgang (Donisthorpe).

P. viridiaeris, *Laich.* "Limpet Run," Sandown (Taylor).

Tanymecus palliatus, *F.* On *Carduaceae*.—Whitecliff (Holland).

Phyllopedon geminatus, *F.* Very common at roots of marram grass on sand-hills.—St. Helens (Holland & Taylor).

Barynotus obscurus, *F.* Cliffs, Ventnor (Sharp); one specimen, exact locality not noted (Morey); Chale and Sandown (Donisthorpe).

Alophus triguttatus, *F.* On a road, Bonchurch, May; also by sweeping, Newport, June (Morey); Chale and Freshwater (Donisthorpe).

Sitones griseus, *F.* Under *Genista*, &c.—St. Helens (Holland).

S. cambricus, *Steph.* Plentiful in moist sandy places, especially by beating towards evening, Sandown, July (Champion); near Shanklin, Aug. (Newbery).

S. regensteinensis, *Hbst.* On *Ulex*, *Sarothamnus*, &c.—Sandown, Aug. (Butler); Shide, Oct. (Newbery).

S. Waterhousei, *Walt.* At roots of *Lotus*, *Plantago*, &c.—I. of Wight (Blatch); Niton (Sharp); Luccombe and Whitecliff Bay, Aug. (Donisthorpe).

S. tibialis, *Hbst.* On *Ulex*.—St. Helens (Holland); fields near waterworks, Sandown, June (Taylor).

S. hispidulus, *F.* On *Trifolium*, &c.—By sweeping, Sandown and Newport in May and June; also in timber yard, Aug. and Sept. (Morey).

S. humeralis, *Steph.* Roots of plants on cliffs, Totland Bay, Aug. (Newbery); Sandown, Aug. (Butler).

S. meliloti, *Walt.* On *Melilotus officinalis*, &c.—Fairly common on melilot, Luccombe, Aug. (Butler); rarely at Luccombe, July (Champion); Yarmouth (Donisthorpe); Ryde (Fowler, B.C.).

S. flavescens, *Marsh.* On various Leguminosae.—By sweeping, Newport, May; also on herbage, Marvel Copse, Aug. (Morey); under flints, top of High Down, Freshwater, Aug. (Newbery).

S. puncticollis, *Steph.* On *Trifolium pratense*, &c.—By sweeping, Parkhurst Forest, Sept.; also in sand-pit, Marvel Copse, Oct. (Morey).

S. suturalis, *Steph.* On *Lathyrus pratensis*.—Totland Bay and Luccombe, Aug. (Newbery); one specimen by sweeping, Sandown, June (Morey); Sandown (Elliott).

S. ononidis, *Sharp.* On *Ononis spinosa* and *repens*.—One specimen in early spring, St. Lawrence (Fowler, B.C.).

This is now (*Eur. Cat.* 1906) considered a var. of *S. suturalis*, *Steph.*

S. lineatus, *L.* On various Leguminosae.—Very common.

S. sulcifrons, *Thunb.* On *Trifolium*, *Medicago*, &c.—Common and gen. dist.: Newport, Shanklin, Luccombe, &c.

Gronops lunatus, *F.* Sandy places at roots of plants: Pan Down, Aug. (Butler).

Hypera punctata, *F.* (*Genus*, *Phytonomus*—as are the succeeding species). On sea-wall, Shanklin, Sept.; also in timber yard, Aug. (Morey); Niton (Sharp); St. Helens (Holland); Sandown (Taylor).

H. rumicis, *L.* On *Rumex* and *Polygonum aviculare*.—Banks of pond near Heytesbury Farm, Parkhurst, Aug. (Butler); St. Helens (Holland); Shalfleet (Morley); Newport, July (Morey); Adgestone, May (Taylor).

H. pollux, *F.* (*adpersa*, *F.*). On Umbelliferae in marshes.—Niton (Sharp).

H. polygoni, *L.* (*arator*, *L.*). On various Caryophyllaceae.—By sweeping, Sandown, June; also on door-step and in timber yard, Newport, May (Morey).

H. suspiciosa, *Hbst.* (*pedestris*, *Payk.*). On *Lotus* and *Lathyrus*.—Near Brading (Fowler).

H. variabilis, *Hbst.* On various Leguminosae.—By sweeping, Sandown, June (Morey); Sandown, April (Taylor); St. Helens (Holland).

H. plantaginis, *De G.* On *Plantago*.—By grubbing at foot of cliffs, Sandown, Aug. (Newbery); near Shanklin (Poole).

H. trilineata, *Marsh.* On *Lotus* and other Leguminosae.—Common and gen. dist.

H. nigrirostris, *F.* On various Leguminosae.—Common and gen. dist.

Rhinocyllus latirostris, *Latr.* (*conicus*, *Froel.*). On various Carduaceae.—In numbers, St. Catherine's Point, July, 1906 (Donisthorpe); same place, Aug. (Sharp); Pan Down, Aug. (Butler).

Cleonus sulcirostris, *L.* (*piger*, *Scop.*). On various Carduaceae.—One specimen on St. George's Down, April (Morey); Luccombe (Guyon).

Liosoma ovatum, *Clair.* (*deflexum*, *Panz.*). On *Anemone nemorosa*, &c.—In sand-pit, Ventnor, July; also by sweeping, Newport, May (Morey).

Liparus coronatus, *Goeze.* On *Anthriscus sylvestris*, &c.—In lanes, Newport, April to July (Morey); on a path near Ventnor (Ellis); Brading (Fowler, B.C.).

Curculio abietis, *L.* (*Hylobius abietis*, *L.*). On pines in woods.—Sand-pit, Marvel Copse, June (Morey & Morley); beaten from tree, same place, Aug.; also in timber yard, Newport, June (Morey).

Orchestes quercus, *L.* On oaks.—One specimen, Rookley Wilderness, Aug. (Morey); Ryde (Morley).

O. scutellaris, *Gyll.* (*testaceus*, *Müll.*). Rather common on alders, Sandown, July (Champion).

O. alni, *L.* On elm.—Common and gen. dist.: Brading, Bowcombe, Parkhurst, Newport, &c.

O. alni var. ferrugineus, *Marsh.* Niton (Sharp); Brading, Aug. (Butler).

O. ilicis, *F.* (*pilosus*, *F.*). On oaks.—One specimen by sweeping herbage, Marvel Copse, June (Morey); Bordwood Copse, May (Taylor).

O. avellanae, *Don.* On oaks, &c.—Shalfleet (Morley).

O. rusci, *Hbst.* On birch.—Rookley Wilderness, Aug. (Morey).

O. iota, *F.* On *Myrica gale*.—Newchurch (Guyon).

Rhamphus flavicornis, *Clair.* (*pulicarius*, *Hbst.*). On *Salix*, &c.—Luccombe, Aug. (Butler); on whitethorn, Pelham Wood (Guyon).

Orthochaetes setiger, *Beck.* At roots of plants in sandy places: Ventnor, April (Fowler); Culver (Ellis); Steephill Cove and St. Lawrence (Guyon).

Grypidius equiseti, *F.* On *Equisetum arvense*.—Luccombe (Fowler, B.C.); Shanklin (Guyon).

Eirirhinus scirpi, *F.* (*Notaris scirpi*, *F.*). Pond in brickfield near station, Sandown (Taylor).

E. acridulus, *L.* (*Notaris acridulus*, *L.*). Roots of rushes in marshes.—Freshwater and St. Helens (Holland).

Thryogenes nereis, *Payk.* On Cyperaceae.—Sandown (Fowler, B.C.).

Dorytomus maculatus, *Marsh.* (*taeniatus*, *F.*). On *Salix caprea*.—Rookley Wilderness, June (Morley); near Shanklin (Poole).

D. pectoralis, *Gyll.* (*rufulus*, *Bedel*). On *Salix caprea*.—Niton (Sharp).

Smicronyx jungermanniae, *Reich.* On *Cuscuta europaea*.—Blackgang Chine (S. Stevens).

Tanyphyrus lemnae, *F.* On *Lemna* in stagnant water.—Brading, Aug. (Butler).

Bagous alismatis, *Marsh.* (*Hydronomus alismatis*, *Marsh.*). On *Alisma plantago*.—In pond, Parkhurst, April (Morey); marshes near Sandown Fort, May (Taylor).

B. limosus, *Gyll.* On aquatic plants in ditches.—Near Newchurch (Ellis); Newchurch Marshes (Guyon).

B. tempestivus, *Hbst.* Aquatic plants, Newchurch Marshes (Guyon).

B. lutulosus, *Gyll.* Very rare, on aquatic plants.—One specimen at Newchurch Marshes (Guyon).

B. claudicans, *Boh.* Newchurch Marshes (Guyon).

Recorded as *B. frit.*

B. glabrirostris, *Hbst.* Marshy places, by sweeping aquatic plants, Sandown, July (Champion).

B. glabrirostris var. **nigritarsis**, *Thoms.* Not rare in moist places, Luccombe (Champion); Brading, Aug. (Butler).

Tychius squamulatus, *Gyll.* (*flavicollis*, *Steph.*). On *Lotus corniculatus*.—Luccombe, Aug. (Butler); I. of Wight, no locality given (Guyon).

T. Schneideri, *Hbst.* On *Anthyllis vulneraria*.—Common and gen. dist. on the south coast.

T. meliloti, *Steph.* On *Melilotus*.—Common and gen. dist. on the coast.

T. lineatulus, *Steph.* On *Trifolium medium*, &c.—Roots of plantains near Sandown (Donisthorpe); St. Helens (Holland); one specimen by sweeping in a field, Newport, May (Morey).

T. tormentosus, *Hbst.* On various Leguminosae.—By grubbing, Culver Cliffs, Sept. (Beare); one specimen near Newport (Morey).

T. tibialis, *Boh.* Roots of *Lotus*, &c.—At roots of plantains near Sandown (Donisthorpe); St. Helens (Holland).

Sibinia arenariae, *Steph.* (*signata*, *Gyll.*). On Caryophyllaceae.—Common and gen. dist. on the coast: Blackgang, Alum Bay, Ventnor, &c.

S. primita, *Hbst.* (*signata*, *Gyll.*). At roots of *Anthyllis vulneraria*, Culver Cliffs, Sept. (Beare).

Miarus campanulae, *L.* On flowers of *Camp. rotundifolia*.—Parkhurst Forest, Aug. (Butler).

M. graminis, *Gyll.* On flowers of *Camp. glomerata*.—In abundance on cliff near the Redoubt, Freshwater, July (Donisthorpe); Freshwater (Gore, Stephens, Holland, &c.).

M. plantarum, *Germ.* On *Linaria vulgaris*.—Pelham Wood (Guyon).

Gymnetron rostellum, *Hbst.* By sweeping *Matricaria* and *Achillea*.—Redcliff, Sandown, June (Morley); Ventnor (Guyon).

G. pascuorum, *Gyll.* On *Plantago*.—Common and gen. dist.

G. labile, *Hbst.* On *Plantago lanceolata*.—Yarmouth (Morley); grassy places, Ventnor (Guyon).

Mecinus pyraister, *Hbst.* On *Plantago*.—Common and gen. dist.

M. circulatus, *Marsh.* On *Plantago lanceolata*.—A fine series at roots of plantain, cliffs near Sandown, April (Beare & Donisthorpe); about the cliffs, Ventnor (Guyon).

M. collaris, *Germ.* On *Plantago*.—In some numbers, salt marsh, Yarmouth, Aug. (Donisthorpe & Holland).

Anthonomus pedicularius, *L.* On flowers of hawthorn.—Two specimens, Parkhurst (Morey); Sandown, June (Taylor).

A. rubi, *Hbst.* On bramble.—By sweeping, Parkhurst Forest, Sept. (Morey); Yarmouth (Elliott).

Cionus scrophulariae, *L.* On *Scrophularia aquatica*.—Near Sandown (Taylor).

C. blattariae, *F. (alauda, Hbst.)*. On several species of *Scrophularia*.—Shalfleet (Morley); Sandown (Taylor).

C. pulchellus, *Hbst.* On *Scrophularia*.—By sweeping herbage near ditch, Brading, June (Morey).

Orobitis cyaneus, *L.* On several species of *Viola*.—One specimen, sand-pit, Marvel Copse, June (Morey); Pelham Wood and Blackgang (Guyon).

Acalles ptinoides, *Marsh.* In woods: The Furzebrake, Ventnor (Guyon).

Mononychus pseudacori, *F. (punctum-album, Hbst.)*. On *Iris foetidissimus*.—Bred from pods taken in field near Ventnor (Prout); in plenty at Niton, Oct. (Donisthorpe); abundant in autumn near Ventnor (Guyon).

Coeliodes rubicundus, *Hbst.* On birch.—Newchurch (Guyon).

C. ruber, *Marsh.* On oak.—Newchurch (Guyon).

C. erythroleucus, *Gmel.* On oak.—Newchurch (Guyon).

C. fuliginosus, *Marsh.* Niton (Sharp).

C. quadrimaculatus, *L. (Genus, Cidnorrhinus)*. On *Urtica dioica*.—Very common and gen. dist.

C. exiguus, *Ol. (Genus, Allodactylus)*. On various species of *Geranium*.—Luccombe, Aug. (Butler).

Poophagus sisymbrii, *F.* On *Roripa amphibia*.—On aquatic plants, Ventnor (Guyon).

Ceuthorrhynchus assimilis, *Payk.* On various Cruciferae.—By sweeping, Newport, May (Morey).

C. erysimi, *F.* On *Alliaria*, &c.—Yarmouth, Aug. (Newbery).

C. contractus, *Marsh.* On various Cruciferae.—In sand-pit, Marvel Copse, and various other localities, March (Morey); near Heytesbury Farm, Aug. (Butler); Sandown (Taylor).

C. cyanipennis, *Germ.* (*sulcicollis*, *Payk.*). On *Alliaria officinalis*, &c.—Not uncommon on the cliffs west of the town, Ventnor (Fowler, B.C.); Sandown (Sharp).

C. hirtulus, *Germ.* On *Draba* and other Cruciferae.—I. of Wight (Blatch).

C. quadridens, *Panz.* On various Cruciferae.—Newport, Aug. (Butler); Freshwater (Holland).

C. pollinarius, *Forst.* On nettles.—Common and gen. dist.

C. pleurostigma, *Marsh.* On many species of Cruciferae.—St. Helens (Holland).

C. resedae, *Marsh.* At roots of *Reseda luteola*, chalk downs, Freshwater, July (Champion).

C. punctiger, *Gyll.* On *Taraxacum officinale*.—Blackgang (Donisthorpe).

C. marginatus, *Payk.* On *Hypochaeris*, &c.—St. Helens (Holland).

C. rugulosus, *Hbst.* On *Matricaria*.—By sweeping *Matricaria*, Bembridge (Donisthorpe & Beare); Sandown (Fowler).

C. melanostictus, *Marsh.* On *Lycopus*, &c.—Sandown, Aug. (Beare); Niton (Sharp).

C. asperifoliarum, *Gyll.* On various Boraginaceae.—Near Newport (Sharp); Pelham Wood (Guyon).

C. chrysanthemi, *Germ.* On Corymbiferae, notably *Chrysanthemum leucanthemum*.—Railway bank near a wood, Haven Street, June (Morley); Pelham Wood (Guyon).

C. litura, *F.* On various species of *Carduus*.—Near Heytesbury Farm, Parkhurst, Aug. (Butler); one specimen, Freshwater, April (Morey); near Shanklin (Poole).

C. trimaculatus, *F.* On Carduaceae.—Freshwater (Champion); near Heytesbury Farm, Aug. (Butler).

Ceuthorrhynchidius floralis, *Payk.* On various Cruciferae.—By sweeping, Newport, May (Morey).

C. pyrrhorhynchus, *Marsh.* On *Sisymbrium officinale*.—Niton (Sharp); Sandown (Taylor); Freshwater (Holland).

C. melanarius, *Steph.* On *Nasturtium officinale*.—Margins of pond, Heytesbury Farm, May (Morey); Parkhurst (Elliott).

C. terminatus, *Hbst.* On *Daucus maritimus*.—On sides of cliffs on *Daucus*, Ventnor and Sandown (Fowler); at roots of *Daucus*, Sandown, also by sweeping, Chale (Donisthorpe); Sandown, Aug. (Butler).

C. horridus, *F.* In plenty by sweeping thistles, Undercliff near Blackgang (Donisthorpe); Thorness Bay (Fowler, B.C.).

C. quercicola, *Payk.* By sweeping herbage, Marvel Copse, April (Morey).

C. troglodytes, *F.* On *Plantago*.—Very common and gen. dist.

C. Dawsoni, *Bris.* On *Plantago coronopus* and *maritima*.—Very common on coast. Near Sandown (Donisthorpe & Beare); Ventnor and Sandown (Fowler); roots of *P. maritima*, sea cliffs, Niton (Sharp).

Amalus haemorrhous, *Hbst.* At roots of plants, Culver Cliffs, Sept. (Beare); Newchurch (Guyon).

Rhinoncus pericarpus, *L.* On various species of *Polygonum*.—By sweeping, Luccombe, May; also on herbage, Ventnor, June (Morey); Newport, Aug. (Butler).

R. perpendiculis, *Reich.* On *Polygonum*.—One specimen by sweeping, Marvel Copse, June (Morey).

R. bruchoides, *Hbst.* On *Polygonum*.—By sweeping at side of the river Yar, Sept. (Beare).

Litodactylus leucogaster, *Marsh.* (*Genus*, *Phytobius*). I. of Wight (Fowler, B.C.). A semi-aquatic species.

Phytobius Waltoni, *Boh.* On *Polygonum hydropiper*.—By sweeping near stream, Rookley Wilderness, Sept. (Morey).

P. quadrituberculatus, *F.* On *Polygonum persicaria*, &c.—In sand-pit, April, and by sweeping, June, Marvel Copse (Morey).

P. quadrinodosus, *Gyll.* On *Polygonum amphibium*.—By sweeping, Parkhurst Forest (Donisthorpe); in moss, Newchurch (Guyon).

Limnobaris T-album, *L.* On rushes in marshy places.—Ryde (Guyon).

This record possibly refers to *L. pilistriata*, *Steph.*

Baris laticollis, *Marsh.* At the roots of *Sisymbrium officinale*, in galls.—One specimen at roots of above plant, Sandown, Aug. (Newbery); one specimen on herbage, Ventnor; also one specimen on a wall in the town, Ventnor, April (Morey).

B. lepidii, *Germ.* At roots of *Lepidium latifolium*.—St. Helens (Holland).

B. analis, *Ol.* On *Inula dysenterica*.—Near Ryde (Revd. G. J. Rudd), also by Crotch and Matthews. One specimen crawling on the sand in a moist place at the foot of the cliffs near Sandown, June, 1887 (Champion). This rare species has only occurred in Britain at the I. of Wight.

Balaninus venosus, *Gr.* On oaks.—One specimen by sweeping herbage, Marvel Copse, June (Morey); one specimen on wood pile of breakwater, Yarmouth, Aug. (Newbery).

B. turbatus, *Gyll.* (*glandium*, *Marsh.*). On oaks.—Parkhurst (Elliott).

B. villosus, *F.* On oaks.—Haven Street woods (Morley); Sandown, June (Elliott).

B. salicivorus, *Payk.* (*Genus*, *Balanobius*). On willows.—One specimen by sweeping, Luccombe, May (Morey).

B. pyrrhoceras, *Marsh.* (*Genus*, *Balanobius*). On willow, oak, &c.—Beaten from oak, Parkhurst Forest, June; also by sweeping herbage, Marvel Copse, June (Morey); Bordwood Copse (Taylor).

Calandria granaria, *L.* In granaries, &c.: amongst corn in a shop, Newport, June to Aug.; abundant and very destructive (Morey).

Caulotrypis aeneopiceus, *Boh.* Rarely, at foot of cliffs, Sandown, July (Champion); in stumps of elder, Ventnor (Guyon).

Codiosoma spadix, *Hbst.* In old posts, salt marsh, Yarmouth, Aug. (Butler); Sandown, Aug. (Donisthorpe).

Magdalis armigera, *Fourc.* In the dead branches of elm.—Yarmouth (Elliott); Spring Vale near Ryde (Morley).

SCOLYTIDAE (IPIDAE)

Scolytus destructor, *Ol.* (*Eccoptogaster scolytus*, *F.*). Sometimes abundant in timber yard, Newport, especially on elms (Morey).

S. intricatus, *Ratz.* (*Genus*, *Eccoptogaster*). Under bark of fencing, Marvel Copse, Oct. (Newbery).

S. rugulosus, *Ratz.* (*Genus*, *Eccoptogaster*). Luccombe, Aug. (Butler).

Hylastes palliatus, *Gyll.* Three specimens near Shanklin (Poole).

Hylastinus obscurus, *Marsh.* In stems of broom and furze.—Beaten off furze, Sandown, July (Champion).

Hylesinus crenatus, *F.* On elm planks in timber yard, Sept. and Oct. (Morey).

H. oleiperda, *F.* One specimen—exact locality not noted (Morey).

H. fraxini, *Panz.* In numbers on ash planks in timber yard, May and December (Morey).

Myelophilus piniperda, *L.* Mining bark of fallen fir, Marvel Copse, April and Aug. (Morey).

Pityophthorus pubescens, *Marsh.* (*ramulorum*, *Perr.*). In dead branches of *Pinus sylvestris*.—By sweeping, Parkhurst Forest (Donisthorpe).

Xylocleptes bispinus, *Duft.* In dead stems of *Clematis vitalba*.—By sweeping, Marvel Copse, Sept. (Morey).

SUMMARY

In the following comparative table the totals of the British species must be regarded as a mere approximation, much depending on the views taken by the compiler as to what should be admitted as species or excluded as varieties; it takes note of all additions and deletions up to the date of publication.

				British species	I. of W. species
Adephaga	{	Geodephaga	... ..	323	169
		Hydradephaga	... ..	133	47
Clavicornia	{	Palpicornia	... ..	106	51
		Brachyelytra	... ..	801	274
		Clavicornia	... ..	715	231
Lamellicornia		... ..	... ..	87	43
Serricornia	{	Sternoxi	... ..	78	17
		Malacodermata	... ..	92	34
		Ptinoidea	... ..	57	18
Longicornia		... ..	... ..	58	19
Phytophaga (Including Bruchidae)				255	113
Heteromera (Including Stylopidae)				129	48
Rhynchophora (Including Anthribidae)				504	245
Total				3338	1309

The following totals of county lists, &c., are given for comparison:—

Suffolk, corrected to July 1908	... ..	1945
Norfolk, „ March 1905	... ..	1803
Essex, „ „ „	... ..	1649
Kent ... ..	... ..	2350
Surrey ... ..	... ..	2346
Lancashire and Cheshire, to 1908	... ..	1486
The whole of Ireland, to June 1901	... ..	1630
Isle of Man, to 1908	... ..	680
(Probable total estimated by Dr. J. Harold Bailey at about 850 species)		
Scilly Islands, to Aug. 1908	... ..	269
Lundy Island, „ „	... ..	464

SUPPLEMENTARY LIST OF COLEOPTERA.

BY

HORACE ST J. K. DONISTHORPE, F.Z.S., F.E.S., &c.

THE editor having asked me to prepare a supplement to the foregoing list, to bring it up to date and make it as complete as possible, I have compiled the following. If I had had the time to apply to Professor Beare, Mr. Champion, and others, who have done the most collecting in the Island, for a full list of all their captures, it would no doubt have been larger. I have, however, referred to all the records I know, and have added all such species as I have taken myself, which are not mentioned in Mr. Newbery's list.

CARABIDAE

Carabus catenulatus, *Scop.* Newport (C. J. C. Pool); Sandown (Taylor).

Leistus rufescens, *F.* Sandown (Ellis).

Stenolophus vespertinus, *Pz.* Borders of pond, Sandown (Ford); under stones in ditch, Sandown (Taylor & Donisthorpe).

***Harpalus discoideus**, *F.* ♂ & ♀ under stones near golf links, Sandown (Taylor). Dawson (*Geodephaga Britannica*, 1854) writes: "I have found it only in the Isle of Wight, and near Sandy in Bedfordshire."

***H. cupreus**, *Dj.* It is just twenty years since this species, which is peculiar to the Isle of Wight in Britain, has been found in any numbers. It has recently, in October, been taken in abundance at Sandown, under stones, and by digging, by Messrs. Beare, Mitford, C. J. C. Pool, Taylor, and Donisthorpe. Mr. Taylor took a fine specimen with red legs and antennae at Alverstone, in August, 1900.

Pterostichus cupreus v. affinis, *Stm.* Under stones, Bembridge (Donisthorpe).

P. versicolor, *Stm.* Sandown (Taylor).

- P. minor**, *Gyll.* Alverstone (Ellis).
Amara consularis, *Duft.* Sandown (Ellis).
Tachys bistriatus, *Duft.* Luccombe Chine, &c. (Fowler, B.C.);
 Luccombe (Champion); Bembridge (Ellis & Donisthorpe).
Bembidium articulatum, *Pz.* Sandown, April, 1897 (Beare).

DYTISCIDAE

- * **Hydroporus nigrita**, *F.* In ditch at side of road, Bembridge (Donisthorpe). (Mr. Champion recorded *Hydraena*, not *Hydroporus nigrita*, from Luccombe Chine).†

HYDROPHILIDAE

- Limnebius papposus**, *Muls.* Sandown (Ellis).
Helophorus intermedius, *Muls.* Bembridge (Ellis).
H. 4-signatus, *Bach.* (dorsalis, *Brit. Cat.*). In pool on cliffs, Sandown (Donisthorpe).
Ochthebius exaratus, *Muls.* In numbers in pool on cliffs, Aug., Sandown (Donisthorpe).
O. bicolon, *Germ.* Bembridge (Ellis); Yarmouth (Donisthorpe).
Cercyon littoralis v. binotatum, *Steph.* Under seaweed, Ventnor, Whitecliff Bay, and Bembridge (Donisthorpe).
C. haemorrhous, *Gyll.* Sandown (Beare).

STAPHYLINIDAE

- Aleochara cuniculorum**, *Kr.* In rabbit's burrow, near Freshwater (Donisthorpe).
Thamiaraea cinnamomea, *Gr.* At "Cossus" tree, Ryde (Donisthorpe).
T. hospita, *Märk.* At "Cossus" tree, Ryde (Donisthorpe).
Homalota pavens, *Er.* Isle of Wight (Fowler, B.C.); Sandown (Ford); Ventnor and Luccombe Chine, in moss in waterfalls (Donisthorpe).
H. depressa, *Gyll.* Sandown (Beare).
H. xanthopus, *Th.* Isle of Wight (Fowler, B.C.).
H. euryptera, *Steph.* Parkhurst (Beare).
H. boletobia, *Th.* In stercore, Sandown (Donisthorpe).
H. coriaria, *Kr.* In decayed fungus on ash, Luccombe Common (Donisthorpe).
H. divisa, *Märk.* In dead crab on beach, Sandown (Donisthorpe).
H. testaceipes, *Heer.* In decayed fungus on ash, Luccombe Common (Donisthorpe).
H. indubia, *Shp.* In haystack refuse, Sandown (Donisthorpe).
Gnypeta labilis, *Er.* In moss in waterfall, Ventnor (Donisthorpe).

† Mr. Newbery informs me that the locality he gives for *Hydroporus nigrita* is correct, but that the name of the recorder should have been given as "Newbery" instead of "Champion" as printed.—EDITOR.

Leptusa fumida, *Er.* In decayed fungus on ash, Luccombe Common (Donisthorpe).

Tachyporus obtusus, *L.* Bembridge (Beare).

T. solutus, *Er.* Bembridge (Beare).

T. pusillus, *Gr.* Chale (Donisthorpe).

Megacronus cingulatus, *Man.* In moss, Calbourne (C. J. C. Pool).

Mycetoporus lepidus, *Er.* Sweeping in Parkhurst Forest (Donisthorpe).

Heterothops dissimilis, *Gr.* Sandown, in haystack refuse (Taylor).

Quedius brevis, *Er.* In nests of *Formica rufa*, Parkhurst Forest (Fowler, B.C.).

Q. umbrinus, *Er.* Ryde (Ford); in moss in waterfall, Ventnor (Donisthorpe).

Q. scintillans, *Gr.* Sandown (Taylor).

Q. rufipes, *Er.* Brading (Beare); Blackgang (Donisthorpe).

Q. attenuatus, *Gyll.* Freshwater (Donisthorpe).

Philonthus marginatus, *F.* Under dead rabbit, Chale (Donisthorpe).

P. ebeninus, *Gr.* Bembridge, in dung (Beare); Sandown (Champion).

P. creuntatus, *Gmel.* In stercore, Sandown (Donisthorpe).

P. micans, *Gr.* Sandown (Beare).

P. trossulus, *Nor.* Common and gen. dist.

Cafius cicatricosus, *Er.* Sparingly, under seaweed, Ryde (Ford).

Actobius procerulus, *Gr.* Isle of Wight (Fowler, B.C.).

Xantholinus ochraceus, *Gyll.* Sandown (Taylor).

Leptacinus formicetorum, *Märk.* In nests of *Formica rufa*, Parkhurst Forest (Fowler, B.C., & Donisthorpe).

Othius laeviusculus, *Steph.* Bembridge (Ellis).

Scopaeus cognatus, *Rey.* Ventnor (E. Saunders), *teste* Fauvel (Fowler, B.C.).

Medon brunneus, *Er.* Parkhurst Forest, &c. (Fowler, B.C.).

M. bicolor, *Ol.* In nests of *Lasius flavus*, Sandown (Donisthorpe).

Sunius lyonessius, *Joy.* (E.M.M., 1908, p. 177). Beating dead hedge, and under plank in field, Aug., Sandown (Donisthorpe).

Stenus ater, *Man.* Alverstone, in bogs (Ellis).

S. subaeneus, *Er.* On mud flat, Luccombe Chine (Donisthorpe).

S. ossium, *Steph.* Alverstone, in bogs (Ellis).

S. cicindeloides, *Gr.* Sweeping reeds in pond, Sandown (Beare & Donisthorpe).

S. latifrons, *Er.* Sweeping, Sandown (Donisthorpe).

Bledius pallipes, *Gr.* Sandown (Ford).

Trogophloeus halophilus, *Kies.* In cliffs, Shanklin and Sandown (Ford).

Trogolinus anglicanus, *Shp.* One specimen under seaweed, Aug. 3, 1908, Bembridge; one on sea-wall, Aug. 11, 1908, St. Helens

(Donisthorpe). Only known from Plymouth and New Zealand before.

Homalium pusillum, *Gr.* Under bark, Ryde (Donisthorpe).

* **Eusphalerum primulae**, *Steph.* Ventnor, &c. (Fowler, B.C.).

SILPHIDAE

Choleva agilis, *Ill.* Luccombe (Beare); a ♂ in moss in water-fall, Luccombe Chine (Donisthorpe).

C. fumata, *Spence.* Parkhurst (Beare).

* **Catops varicornis**, *Rosen.* Luccombe, April, 1897 (Beare).

Bathyscia wollastoni, *Jan.* On decayed potato, Newport (Jeffery).

SCYDMAENIDAE

Neuraphes elongatulus, *Müll.* Alverstone (Ellis).

Scydmaenus scutellaris, *Müll.* Ventnor (Beare); Alverstone (Ellis).

Euplectus piceus, *Mots.* In nests of *F. rufa*, Parkhurst Forest (Fowler, B.C.).

PHALACRIDAE

Phalacrus substriatus, *Gyll.* Isle of Wight (Fowler, B.C.).

Olibrus liquidus, *Er.* Sandown (Ellis).

O. flavicornis, *Stm.* (helveticus, *Tourn.*). Three specimens at Sandown (Champion).

COCCINELLIDAE

Platynaspis luteorubra, *Goez.* In tufts, Culver (Ellis).

ENDOMYCHIDAE

Lycoperdina bovistae, *F.* In "puff-ball," Marvel Copse, near Newport (Jeffery).

HISTERIDAE

Myrmetes piceus, *Pk.* In nests of *Formica rufa*, Parkhurst Forest (Fowler, B.C.).

Acritus punctum, *Aub.* Under seaweed, &c., Bembridge (Ellis).

NITIDULIDAE

Meligethes difficilis, *Heer.* Sandown (Beare).

M. rotundicollis, *Bris.* Sandown (Beare).

Rhizophagus parallellocollis, *Gyll.* On decayed potato, Newport (Jeffery); at "Cossus" tree, Ryde (Taylor and Donisthorpe).

R. ferrugineus, *Pk.* Under fir bark, Parkhurst Forest (Donisthorpe).

MONOTOMIDAE

Monotoma longicollis, *Gyll.* Sandown (Donisthorpe).

LATHRIDIIDAE

Lathridius lardarius, *De G.* Sandown (Beare). 28305

Enicmus testaceus, *Steph.* In fungus on decayed tree, Sandown (Ellis).

Melanophthalma transversalis v. **wollastoni**, *Wat.* Sandown (Beare).

CRYPTOPHAGIDAE

Antherophagus pallens, *Ol.* Parkhurst Forest (Fowler, B.C.); in nest of *Bombus muscorum*, Sandown (Dollman).

MYCETOPHAGIDAE

Litargus bifasciatus, *F.* On black fungus on ash, Luccombe Common (Donisthorpe).

BYRRHIDAE

Syncalypta spinosa, *Ross.* Shanklin and Sandown (Ford).

PARNIDAE

Parnus auriculatus, *Pz.* Under stones in waterfall, Freshwater (Donisthorpe).

HETEROCERIDAE

Heterocerus marginatus, *F.* In small pond, Parkhurst Forest (Donisthorpe).

LAMELLICORNIA

SCARABAEIDAE

Onthophagus vacca, *L.* Luccombe (Ellis); Chessel (Donisthorpe).

Aphodius pusillus, *Hbst.* Sandown (Ellis).

SERRICORNIA

ELATERIDAE

Athous rhombeus, *Ol.* Larva under bark near Ryde (Donisthorpe).

A. niger, *L.* Blackgang (Donisthorpe).

Agriotes obscurus, *L.* Sandown (Ellis).

Corymbites tessellatus, *F.* Sandown (Ellis).

PHYTOPHAGA

CERAMBYCIDAE

Strangalia melanura, *L.* Parkhurst Forest (C. J. C. Pool).

CHRYSOMELIDAE

Phytodecta vitellinae, *L.* Sandown (Beare).

Longitarsus piciceps, *Steph.* On ragwort, Ventnor (Beare).

Haltica palustris, *Weise.* Freshwater (Donisthorpe).

H. pusilla, *Duft.* Ventnor (Ellis).

Phyllotreta punctulata, *Marsh.* Ventnor (Beare); Culver (Ellis).

P. tetrastigma, *Com.* On wall of coast-guard station, Sandown (Ellis).

Aphthona nigriceps, *Redt.* On *Geranium pratense*. One specimen swept in copse, Aug. 1908, Sandown (Donisthorpe). Only recorded hitherto, in Britain, from Eggington, near Burton-on-Trent; Cowfold; and in Scotland from Kirkealdy.

Cassida vibex, *L.* Sweeping thistles, Luccombe (Dollman).

C. equestris, *F.* Sweeping in damp place, Alverstone (Beare).

HETEROMERA

TENEBRIONIDAE

Blaps mortisaga, *L.?* In bakehouse, Sandown (Taylor). Mr. G. J. Arrow, of the Natural History Museum, South Kensington, writes: "The *Blaps* is either an abnormal specimen of *B. mortisaga*, or a species we have not got."

MELANDRYIDAE

Orchesia micans, *Pz.* Larvae in numbers, in hard fungus on ash, Luccombe Common (Taylor & Donisthorpe).

MORDELLIDAE

Mordella fasciata, *F.* Ryde, 1836 (Sir John Lighton, and Rev. G. T. Rudd).

Mordellistena lateralis, *Ol.* Ryde, 1836 (Sir John Lighton, and Rev. G. T. Rudd).

Anaspis latipalpis, *Schil.* ♂ by sweeping, Chale; ♀ at roots of grass, Sandown (Donisthorpe).

RHYNCHOPHORA

CURCULIONIDAE

Apion livescerum, *Gyll.* Ventnor (Ellis).

A. atomarium, *Kirb.* At roots of wild Thyme, Yaverland (Beare).
Otiorhynchus tenebricosus, *Hbst.* Bembridge (Donisthorpe).
Phyllobius pomonae v. cinereipennis, *Gyll.* Blackgang (Donisthorpe).

Atactogenus exaratus, *Marsh.* In tufts, Ventnor (Ellis).

Sitones crinitus, *Hbst.* Sandown (Beare); Ventnor (Ellis).

Hypera alternans, *Steph.* Sweeping, Ventnor (Beare).

H. murina, *F.* At roots of *Arenaria maritima*, Blackgang (Donisthorpe).

Orchestes salicis, *L.* Freshwater (Donisthorpe).

Tychius juncus, *Reich.* Roots of plantains, &c., Sandown (Donisthorpe).

T. pygmaeus, *Bris.* Sandown (Donisthorpe).

Miccotrogus picirostris, *F.* Culver and Yarmouth (Beare); Shanklin (Poole); Blackgang (Donisthorpe).

Gymnetron antirrhini, *Pk.* On *Linaria vulgaris*, Freshwater (Donisthorpe).

Ceuthorhynchus viduatus, *Gyll.* On *Stachys palustris*; sweeping banks of ditch, Brading (Mitford).

C. triangulum, *Boh.* At roots of *Achillea millefolium*, Sandown (Donisthorpe).

Eubrychius velatus, *Beck.* Sweeping in damp thicket, Alverstoke (Beare).

SCOLYTIDAE

Scolytus multistriatus, *Marsh.* Under bark of elm (Beare, Bouskell, & Donisthorpe).

NOTE.—In reference to the above supplementary list of Beetles kindly compiled by Mr. Donisthorpe after he had read the proofs of Mr. Newbery's list, it should be noted that the five species marked with an asterisk are not new to the preceding list, but are inserted in the supplement because Mr. Donisthorpe is able to give further information concerning them. A few varieties are also given in the second list in cases where the type form only was mentioned by Mr. Newbery, with a view to making the combined lists as complete as possible. Deducting these, the species enumerated above, and not included in the main list, number 125. Adding these to the 1309 species comprised in the very satisfactory list compiled by Mr. Newbery, we have a grand total of 1434 species recorded thus far as occurring in the Isle of Wight.—EDITOR.

LEPIDOPTERA.

BY HUBERT F. POOLE.

THE following list of Lepidoptera will, I hope, be found accurate and useful. Great care has been taken in examining all the records, and anything doubtful has been omitted or relegated to the appendix.

The Isle of Wight has always been a favourite collecting-ground for the Lepidopterist, and numerous records are scattered throughout the pages of various magazines. The first published list is that compiled by Mr. Maitland for Dr. Martin's "Undercliff of the I. of W." (1849), and is a record of the species taken by him in the vicinity of Ventnor.

The next, and most complete hitherto issued, is that by Mr. A. G. More in Venables' "Isle of Wight" (1860), in which he was assisted by those veteran entomologists, Mr. F. Bond and Dr. Wallace.

Many Isle of Wight species are included in the list of Lepidoptera in "The Victoria History of the Counties of England—Hampshire" (1900). There is also a list by the Reverend A. C. Hervey, M.A., in the "Proceedings of the Hampshire Field Club" (1887—91), with many Isle of Wight references.

The following shows the advance in our knowledge regarding the number of species found in the Isle of Wight:—

Species on Maitland's list	(1849)	=	319.
„ „ More's list	(1860)	=	630.
„ „ the present list	(1908)	=	964.

I have endeavoured under the head of each species to give some locality where the same has been taken. As this has not been attempted for all the species before, it should prove useful to the collector.

My acknowledgments are due to all those who have so kindly sent in lists of their captures, or given me access to their collections. Particularly must I thank Mr. Louis B. Prout, F.E.S., who not only allowed me the use of his valuable notes on the Isle of Wight Lepidoptera, but collected for me many records from the old

Entomological Magazines and Books to which I had not access, and also supplied the original notes from the Diary of Dr. Wallace, kindly lent him by Mr. G. C. Griffiths, its present possessor. Also Mr. Eustace R. Banks, M.A., F.E.S., who kindly examined the MS. sheets, making numerous additions and suggesting some important improvements. Space does not permit a list of all who have so kindly assisted, but I have in each case given the name of the recorder by the side of all but the commonest species.

The classification and nomenclature are, as far as possible, those of South's "The Entomologist" list.

RHOPALOCERA—BUTTERFLIES

(53 species are recorded).

Papilio machaon (Swallow-tail). This is one of our rarer butterflies; it formerly appears to have been indigenous, but is now seldom seen. The latest records are one captured by Mr. P. Wadham, on August 26, 1900, near Parkhurst Forest; and one taken in a meadow west of Parkhurst Forest, in 1902, by Mr. C. J. C. Pool. The earlier records give Yarmouth and Freshwater as localities.

Aporia crataegi (Black-veined White). Of great rarity, and possibly now extinct; the few captures appear to have all been made in woods near Ryde.

Pieris brassicae (Large White). Very common.

P. rapae (Small White). Very common. Both *brassicae* and *rapae* swarmed in the Island during the autumn of 1908. A Shanklin fisherman told me that he saw numbers of White Butterflies when several miles at sea during the same period; evidently a strong migration was taking place.

P. napi (Green-veined White). Common: strongly-marked specimens occur at Newchurch and throughout the valley of the Eastern Yar.

Euchloe cardamines (Orange-tip). Common and generally distributed: the small variety occasionally occurs.

Leucophasia sinapis (Wood White). Very rare: there is no recent record, but single specimens have been captured in the following localities: Combley and Haven Street woods, in Quarr Copse, and near Brading (More); Appuldurcombe and Whippingham (Newman's Butterflies); Freshwater (H. Rogers, in Ent. Intel., 1859, p. 35); Parkhurst (Bevis & Weeks).

Colias hyale (Pale Clouded Yellow). Uncertain in appearance, but never so common as *edusa*; occurred in some numbers in 1900,

and has been taken at Sandown (Prout); Newport (Wadham); Parkhurst (Morey); Ventnor (Newman's Butterflies).

C. edusa (Clouded Yellow). Very uncertain in appearance: in some seasons every field will contain specimens; during others not one will be seen. When plentiful it is to be met with over the whole of the Island. The seasons of 1859, 1876, 1877, 1892, and 1895 produced this species in numbers; since 1895 it has been scarce. The variety of the female, *helice*, usually occurs sparingly with the type, but Mr. Prout records it as "taken rather freely at Sandown in 1892 and 1895." A few of the type were seen in 1908.

Gonepteryx rhamni (Brimstone). Not uncommon, but is never abundant.

Argynnis selene (Small Pearl-bordered Fritillary): A local species, but fairly plentiful where it occurs: West Cowes (C. Morley); Rew Down (Peck); Bembridge (Wall. Diary); and plentiful in Parkhurst Forest.

A. euphrosyne (Pearl-bordered Fritillary). Common in woods, &c.: West Cowes (C. Morley); Whitefield Woods (J. Taylor); Bordwood, Parkhurst, America Woods, &c. (Poole).

A. latona (Queen of Spain Fritillary). Very rare: one at Sandown, October 20, 1865; one at Ventnor, October 21, one at same place, October 24, and on November 4, two in the same line of cliff as those last mentioned (Newman's Butterflies). The following records probably refer to some of the specimens mentioned by Newman: two taken in the Isle of Wight, October, 1865 (A. Owen, in Entom., vol. ii, p. 340); two taken at Ventnor in August, 1872, one by Mr. J. Venables, who records both in the "Entom.," vol. vi, p. 213.

A. aglaia (Dark Green Fritillary). Local, and not particularly common: Freshwater and the Undercliff (More); a few are found at Parkhurst (Morey); Haven Street (Nobbs); Ventnor (Peck); one at Redcliff, near Sandown (J. Taylor); also at Luccombe Copse and on St. Boniface Down (Poole).

A. adippe (High Brown Fritillary). Local: Freshwater and Firestone Copse (More); Pelham Woods (Snow); Rew Down (Morey); and in Parkhurst Forest (Poole).

A. paphia (Silver-washed Fritillary). Common in the larger woods, and occasional specimens are found elsewhere: its chief locality is Parkhurst Forest, where also the var. *valesina* has been taken by Mr. P. Wadham. Mr. Prout records it as being common along the cliffs between Sandown and Shanklin in 1887.

Melitaea aurinia (Greasy Fritillary). Very local, and decidedly uncommon: a few may be obtained on the western outskirts of Parkhurst Forest, and Mr. Morey has taken a single specimen at Gurnard, and another in a lane at Newport.

M. cinxia (Glanville Fritillary). This insect is now entirely confined to the Isle of Wight as a British species, and is here very local

LARVAE OF THE GLANVILLE FRITILLARY.



H. F. Poole, photo. Winter web, photographed in situ,
the Undercliff (reduced).



H. F. Poole, photo. Group of larvae (nat. size)
skin changing: photographed in situ.

and decreasing in numbers. The Sandown locality, so well described in Newman's "Butterflies," is completely wiped out, and many other spots where it was formerly abundant now fail to yield specimens. At present it is only found in one or two restricted spots in the Undercliff. The imago of this species is illustrated from a photograph of living specimens, and groups of larvae are shown among their natural surroundings. The larvae were photographed *in situ* exactly as found; the upper picture is of a winter web taken in the early spring, with larvae sunning themselves on the outside; the lower picture shows a group undergoing the process of skin changing. The larva on the left has just cast its old skin and the tubercles show white; these regain their normal blackness in a few hours.

Vanessa c-album (Comma). Very scarce: Freshwater and Sandown (More).

V. polychloros (Large Tortoiseshell). Not common, but distributed over the Island: Parkhurst (More); Ventnor (Snow); Sandown, Brading, &c., very occasionally (Prout). I have also seen it at Shanklin and in the Undercliff.

V. urticae (Small Tortoiseshell). Our commonest *Vanessa*.

V. io (Peacock). Common: more so in some seasons than others.

V. antiopa (Camberwell Beauty). Very rare: I have the following records: Ventnor and Seaview, 1846 (Zoologist, p. 1506); one captured at Bembridge, April 13, 1856 (Wall. Diary); fourteen taken in Isle of Wight—at Wroxall, Shanklin, Ventnor, and Freshwater, by Mr. J. Venables, in August, 1872 (Entom., vol. vi, p. 216); also taken at Freshwater, August 23, 1872; Shanklin, one taken by a fisherman in October, 1876 (T. K. Crossfield, in Entom., vol. ix, p. 256); one at Totland Bay, August 14, 1888 (Entom., 1888, p. 229); one September 26, 1903, is recorded in the "Field," by W.T.; Quarr Abbey, one on September 27, 1904 (H. P. Tarrant, in Entom., 1904, p. 323).

V. atalanta (Red Admiral). Common. Mr. F. Draper tells me that hundreds were attracted to the light at St. Catherine's Lighthouse on the night of October 20, 1908; so many that they partially obscured the light and were swept up in heaps for removal.

V. cardui (Painted Lady). Plentiful during most seasons, though sometimes quite scarce.

Limenitis sibylla (White Admiral). Common at Parkhurst, and may also be taken at Quarr Copse, Whitefield Woods, &c.

Apatura iris (Purple Emperor). Very scarce: a female was taken in Parkhurst Forest on August 2, 1890, by Mr. P. Wadham; and about three or four years after he saw another, but could not get within striking distance. Other localities are Freshwater and Whitefield Woods (More); Brading (J. Pristo); and Yarmouth (F. Bond), in Newman's "Butterflies."

Anosia erippus (The Milkweed). Has been taken in the Isle of

Wight on several occasions. One was seen at Ventnor by Mr. Lester Arnold in September, 1885 (Entom., vol. xviii, p. 305); at Ventnor a specimen was secured about 1884 or 1885, and two have appeared at Shanklin. Of these one was captured by Mr. J. Billings, in 1887, and sent by him to the British Museum for identification, afterwards passing into the collection of Mr. Furneaux. About the year 1895, I saw a remarkably large butterfly on the wing at Shanklin, and a few days afterwards a specimen of *erippus* fell to the straw hat of a visitor—no doubt the same insect. One was picked up on the Culvers by Mr. G. H. Heath on September 13, 1908.

Melanargia galatea (Marbled White). Common in open spaces on the Chalk, and not quite so common in woods: Freshwater (Hodges); Haven Street (Nobbs); Sandown (J. Taylor). I have also taken it at Parkhurst, Shanklin—near the downs, St. Lawrence, and Blackgang.

Pararge egeria (Speckled Wood). Common in woods and lanes: Steyne Wood, near Bembridge (Prout); Freshwater (Hodges); Whippingham and Freshwater (Nobbs); Parkhurst, Hampstead, Ningwood, &c. (Poole).

P. megaera (Wall Brown). Common throughout the Island.

Satyrus semele (Grayling). Common on most of the downs and heaths, and sometimes in woods.

Epinephele ianira (Meadow Brown). Most abundant: bleached varieties are occasionally found.

E. tithonus (Large Heath). Common, especially about hedges.

E. hyperanthus (Ringlet). Common in woods: the var. *arete* has been twice taken at Bordwood.

Coenonympha pamphilus (Small Heath). Abundant, especially on the downs and heaths.

Thecla betulae (Brown Hairstreak). Rare: has recently been taken near Haven Street (Long & Nobbs); the older records give Ryde, Quarr, and Whippingham as localities. In 1896 I saw a fresh specimen that had been captured in the Undercliff.

T. quercus (Purple Hairstreak). May be found in all the oak woods.

T. rubi (Green Hairstreak). Local, but fairly plentiful: I have records from all parts of the Island.

Polyommatus phloea (Small Copper). Plentiful: South, in his book on the British Butterflies, records a curious variety of this species taken in the Isle of Wight.

Lycaena baetica (Long-tailed Blue). One at Freshwater, August 23, 1878 (Entom., vol. xii, p. 83). Some doubt has been thrown upon this record: see Tutt's "Nat. Hist. Brit. Butt.", vol. ii, p. 375.

L. aegon (Silver-studded Blue). Uncommon: the only recent record is made by Mr. C. J. C. Pool, who reports them as "settled in numbers on grass and sedge in damp meadows on the west side of



H. F. Poole, photo.

GLANVILLE FRITILLARIES
resting on one of their favourite flowers—the Kidney Vetch.

Parkhurst Forest, in 1902." Hampstead (F. Bond), Newport (A. Owen)—Newman's "Butterflies."

L. astrarche (Brown Argus). Common, but local: St. Boniface Down, Yaverland, Whitecliff Bay, Bembridge and Brading Downs (Poole); Haven Street (Nobbs).

L. icarus (Common Blue). Abundant. The following extract is from South's "Butterflies of the British Isles"—"Scotch and Irish specimens (males) often have some black spots on the outer margin of the hind wings (upper side)," and one of this variety is figured in that work from Ventnor. I have taken one of the same variety at Shanklin, where also the ab. *arcua* has turned up several times.

L. bellargus (Adonis Blue). Local, on the Chalk: Bowcombe Down (Morey); round Carisbrooke Castle, abundant (Prideaux); Mottistone and Freshwater (Prideaux, in Entom., 1896, p. 91); also St. Boniface Down and Bembridge Down (Poole).

L. corydon (Chalk-hill Blue). Common on the Chalk and Upper Greensand: Pan Down (Morey); Freshwater (Hodges); Carisbrooke Castle (Nobbs); St. Boniface Down, Limpet Run, Brading and Bembridge Downs (Poole).

L. argiolus (Holly Blue). Fairly common: Shanklin, the Landslip, Bordwood (Poole); near Niton, and other parts of the Undercliff (Vic. Hist.); Sandown (Taylor); Carisbrooke (Prideaux, in Entom., 1896, p. 91); Newport (Morey).

L. minima (Small, or Bedford Blue). Common, but local: Shanklin, Ventnor, Carisbrooke, Totland, Freshwater, Bonchurch, Sandown.

Nemeobius lucina (Duke of Burgundy). A local species and uncommon: Bordwood and Combley (Poole); Quarr Copse (More); wood on Apes Down, Totland Bay, and Parkhurst Forest (Morey); Haven Street (Nobbs).

Syrichthus malvae (Grizzled Skipper). Fairly plentiful: Bordwood and Parkhurst (Poole); Quarr Copse and Bembridge (More); Ningwood Common, near Sandown, Bembridge Down (Taylor); Ventnor (Prout); Bonchurch (Wall. Diary); Yarmouth (E. R. Banks).

Nisoniades tages (Dingy Skipper). Abundant in certain localities, particularly on the east side of the Island.

Hesperia thaumas (Small Skipper). Plentiful where it occurs, but somewhat local: Apse Heath, Parkhurst, Whitecliff Bay (Poole); Pan Down, Shide, Bowcombe Down (Morey); Rew Down (Peck); Sandown (Prout); Bembridge (Stainton); Whippingham Woods (Nobbs).

H. sylvanus (Large Skipper). Common and generally distributed.

HETEROCERA—MOTHS

SPHINGES

(22 species are recorded).

Acherontia atropos (Death's-head Hawk). Not uncommon, but mostly found in the larval stage.

Sphinx convolvuli (Convolvulus Hawk). Common during some seasons, hovering over Petunias, &c., at dusk. It is recorded from all parts of the Island.

S. ligustri (Privet Hawk). Common throughout the Island.

Deilephila galii (Bedstraw Hawk). Very rare: four larvae and two imagines at Freshwater, 1859 (More).

D. livornica (Striped Hawk). This rare hawk-moth has been taken sparingly in most parts of the Island. The following localities are given in Tutt's "Brit. Lep.": Ryde, Osborne, Freshwater, Ventnor, Brighstone, near Newport, Winford, and Niton. There are occasional records in the old periodicals, e.g. "Zool.," pp. 803, 1444, 7107, &c.; "Entom.," vol. iii, pp. 288-9, vol. iv., p. 149, vol. v, pp. 129-30; and Maitland records two taken in the Undercliff. More recently, two were taken at Shanklin, May 26 and 28, 1904; a larva near Sandown in July of the same year; and three imagines at Shanklin in 1906 on June 7 and 9, and September 21.

Choerocampa celerio (Silver-striped Hawk). Very rare: one at Sandown in 1834, and one at Freshwater (More); one "at light," at Ryde (J. Ingram); Nettlestone (Entom., vol. iii, p. 42); two specimens—a larva and an imago—were obtained from a greenhouse on the Watergate Road, Newport, about 1879—probably introduced (Morey); Tutt's "Brit. Lep." also gives Shanklin (Leech).

C. porcellus (Small Elephant-Hawk). Fairly plentiful: Shanklin (Poole); several at Ventnor (Draper); Bembridge, St. Helens Spit, and the Undercliff (More); Newport (Morey); above Limpet Run, Sandown (H. H. May); Freshwater, freely in one or two spots (Hodges); &c.

C. elpenor (Large Elephant-Hawk). Moderately common: Shanklin (Poole); Newport (Wadham); Sandown (Taylor); Bembridge and Freshwater (More); Freshwater (Hodges); &c.

C. nerii (Oleander Hawk). Very rare: one at Sandown in 1834, and one at Freshwater (More).

Smerinthus ocellatus (Eyed Hawk). Uncommon: Shanklin (Poole); Bembridge and Ryde (More); one at Newport (Morey); Sandown (Taylor).

S. populi (Poplar Hawk). Common.

S. tiliae (Lime Hawk). Scarce: has been taken at Bembridge (More), and near Ryde (Ingram).

Macroglossa stellatarum (Humming-Bird Hawk). Common

everywhere, hovering up and down walls facing the sun, and over blossoms of valerian, &c.

M. fuciformis (Broad-bordered Bee Hawk). Isle of Wight (Grant, in Tutt's Brit. Lep.).

M. bombylifformis = *tityus* (Narrow-bordered Bee Hawk). Near Osborne (More). Both of the bee hawks must be very rare.

Trochilium crabroniforme (Hornet Clearwing of the Osier). Fairly common at Shanklin, the larvae feeding in the *trunks* of *poplars* (Poole); Sandown (J. Taylor); Freshwater, 1903 (J. P. Mutch).

Sesia sphegiformis (White-barred Clearwing). One specimen recorded amongst Mr. Morey's notes as "taken by a friend," but without further data.

S. tipuliformis (Currant Clearwing). Common at Shanklin in gardens (Poole); Newport (Morey); Sandown (G. T. Woods).

S. asiliformis (Yellow-legged Clearwing). One specimen captured at rest on the trunk of a chestnut tree in Sandown, July 29, 1906 (J. Taylor).

S. ichneumoniformis (Six-belted Clearwing). Common on the coast of the Isle of Wight (Vic. Hist.); Sandown Bay and Freshwater (More); rare in the Undercliff (Maitland).

Zygaena trifolii (Five-spot Burnet). Common: Shanklin (Poole); Rookley Wilderness (Morey); near Sandown (Taylor).

Z. filipendulae (Six-spot Burnet). Common: Yaverland, Shanklin, Blackgang, Limpet Run (Poole); Pan Down (Morey); &c.

BOMBYCES

(79 species are recorded).

Sarothripus undulanus. Centurion's Copse, one only (Prout).

Earias chlorana. Sandown, sparingly (Prout).

Hylophila prasinana. Local: Bordwood, and America Woods near Shanklin (Poole); Whippingham (Nobbs).

Nola cucullatella. Sandown (Prout); Bembridge (Wall. Diary).

N. strigula. Rare (More); Steyne Wood, Bembridge, at sugar and light, July, 1856 (Wall. Diary).

N. confusalis. Bembridge, May 7, 1857 (Wall. Diary).

N. albulalis. Mr. W. H. B. Fletcher caught a specimen of *Nola albulalis* near Freshwater (Vic. Hist.).

N. centonalis. Very rare (More). A single specimen of this pretty little insect came to light on July 1, 1858, at Bembridge in the Isle of Wight (Newman's "Moths").

Nudaria mundana. Rare in the Undercliff (Maitland); Brading Down and vicinity, not rare (Prout); Freshwater (Hodges); East Cowes (Nobbs).

Setina irrorella. Common at Freshwater Cliff (Newman's

"Moths"); the rare IVI aberration (= *ab. signata*) has been occasionally taken at the same place (see Entom., vol. xxxvii, p. 297, &c.).

Calligenia miniata. Fairly common: Shanklin and Parkhurst (Poole); Pelham Woods (Snow); Sandown (Taylor); Freshwater (Hodges); Newport and Nettlestone (Morey); E. Cowes (Nobbs); Yarmouth (E. R. Banks).

Lithosia mesomella. Bembridge (Wall. Diary); Parkhurst Forest (A. Bevis).

L. sororcula. Rare (More); one specimen at Shanklin on June 2, 1908 (Poole).

L. griseola. Sandown, the type freely, the var. *stramineola* apparently rare (Prout); near Yarmouth (Tutt, in Entom., 1889, p. 236); Bordwood (Poole).

L. lurideola. Common at Bordwood, and at Greatwoods Copse, Shanklin (Poole); Sandown, at light (Taylor); near Yarmouth (Tutt, in Entom., 1889, p. 236); Freshwater (P. W. Abbott); E. Cowes (Nobbs).

L. complana. Bembridge, July 22, 1857; and a larva, June 12, 1857 (Wall. Diary); a single specimen at Blackpan Common, near Sandown (Poole).

Gnophria quadra. Rare (More); Bembridge (Wall. Diary).

G. rubricollis. Mr. Crump, of Shanklin, tells me that during one season it swarmed in America Woods. It has also been taken at Parkhurst. East Cowes (Nobbs).

Emydia cribrum. Rare: taken at Freshwater, in 1859, by Mr. H. Rogers (Ent. Intel., 1859, p. 35).

Deiopeia pulchella. Mr. Bevis, of Ryde, has a specimen taken in 1878, in marshes near Ryde—now the Recreation Ground. I have also heard of a specimen taken near Shanklin. "Isle of Wight, 1871," is given in South's "Moths."

Euchelia jacobaeae. More calls it rare, but I have found it decidedly common, particularly round Sandown. Other localities are Bembridge, Shanklin, Newchurch (Poole); Ventnor, common (Draper); Newport (Morey); E. Cowes (Nobbs).

Callimorpha hera. One was captured in the Isle of Wight in 1877 (South's "Moths").

Nemeophila russula. Rare: Mr. G. Masters, of Cowes, took a single specimen at light near Osborne in 1907; Parkhurst Forest (Bevis).

Arctia caia. Plentiful.

A. villica. Common throughout the Island.

Spilosoma fuliginosa. Fairly common: Bembridge (Poole); Parkhurst (Morey); Ventnor (Draper); Sandown, at light (Taylor).

S. mendica. Not very common: Pelham Woods (Draper); Newport (Wadham); Sandown (Prout); Shanklin (Poole).

S. lubricipeda. Abundant.

S. menthastri. Abundant.

S. urticae. One specimen only has been taken near Sandown in 1902, now in coll. J. Taylor, this being the only record for Hants.

Hepialus humuli. Common: meadows at Shanklin (Poole); Newport (Morey); Sandown, Atherfield, and Bembridge (Taylor).

H. sylvinus. Common round Shanklin (Poole); the Culvers and Hillyards (Taylor); Niton (Bloomfield); Gurnard, scarce (Nobbs).

H. velleda. Rare: Bembridge, September, 1855, and August 21, 1857 (Wall. Diary); one specimen at Shanklin in a field near the downs (Poole).

H. lupulinus. Common: Shanklin (Poole); Sandown (Taylor); Newport (Morey).

H. hectus. Very common near Shanklin—Greatwoods Copse, America Woods, &c. (Poole); Sandown (Taylor); Parkhurst (Morey).

Cossus ligniperda. Plentiful: Shanklin, Sandown, Newport, Cowes, &c.

Zeuzera pyrina. Fairly common: Shanklin, Cowes, Parkhurst, and the Undercliff.

Porthesia chrysorrhoea. Sometimes common near Shanklin, and has also been taken at Apse Heath, Sandown, Niton, Bembridge, &c. At Sandown, in 1908, there were hundreds of webs within a restricted area, the bushes soon being reduced to bare twigs by the hungry larvae.

P. similis. Common.

Leucoma salicis. Fairly frequent at Shanklin (Poole); Sandown (Taylor).

Ocneria dispar. A single specimen was taken some years ago in Parkhurst Forest by Mr. A. Bevis.

Psilura monacha. Bordwood (Prout); Bembridge (Wall. Diary); Whippingham (Nobbs).

Dasychira fascelina. Is given on More's list as rare.

D. pudibunda. Common: Bordwood, Shanklin, Newport, Whippingham.

Orgyia antiqua. Abundant.

Trichiura crataegi. Rare: the Undercliff (Maitland).

Poecilocampa populi. Fairly common: Shanklin, Sandown, Whippingham.

Eriogaster lanestris. Is found sparingly: Whippingham (Nobbs). "Nettlestone (Ingram); Yarmouth (Kaye)"—Tutt's "Brit. Lep."

Bombyx neustria. Common.

B. rubi. Plentiful: Shanklin Downs (Poole); Pan Down (Morey); Whippingham (Nobbs).

B. quercus. Generally distributed and common.

B. trifolii. Rare: Nettlestone (Ingram, in Tutt's Brit. Lep.). Professor E. B. Poulton has sent me the following note on its occurrence:—"I first heard, on the authority of Mr. H. Grose-Smith,

of the occurrence of *L. trifolii* on the Dover at St. Helens (the site of the Bembridge links), on July 6, 1899. Mr. W. Holland, when staying with me, found a larva on the Dover which spun up, and a small *trifolii* emerged from the cocoon on August 15, 1899. Next year my friend, Mrs. F. Gotch, captured a male moth on the beach of the Dover, August 31, 1900. This last specimen is much worn."

Odonestis potatoria. Common throughout the Island.

Lasiocampa quercifolia. Fairly common: Shanklin (Poole); Parkhurst (Morey); Sandown (Taylor); Culver Down (Prout); Whippingham (Nobbs). Mr. Draper has a number taken from the lantern of St. Catherine's Lighthouse.

Saturnia pavonia. May be obtained occasionally on the downs between Shanklin and Ventnor.

Drepana lacertinaria. Bembridge (Wall. Diary).

D. falcataria. Sandown (Taylor); Bembridge (Wall. Diary); Whippingham (Nobbs).

D. binaria. Fairly common: Shanklin (Poole); one at Ningwood (Taylor); Sandown, on two or three occasions at lamps in the town (Prout); Werrar Wood (Prideaux); Bembridge (Wall. Diary); Whippingham (Nobbs).

Cilix glaucata. Common: Shanklin, Sandown, Newport, Whippingham.

Dicranura furcula. Rare: Ventnor (Maitland); Sandown, larvae occasionally (Prout); Parkhurst (Nobbs).

D. bifida. Rare: Ventnor (Maitland); Newport (Wadham); E. Cowes (Nobbs).

D. vinula. Plentiful.

Stauropus fagi. Very rare: has been taken by Mr. Masters at West Cowes.

Pterostoma palpina. Uncommon: Ventnor (Maitland); Sandown and St. Helens (Prout); at lamps, E. Cowes (Nobbs).

Lophopteryx camelina. Uncommon: Centurion's Copse (Prout); Bembridge (Wall. Diary); Shanklin, one only (Baker); E. Cowes (Nobbs).

Notodonta dictaea. Fairly common at Shanklin (Poole); Sandown (Crump); E. Cowes (Nobbs).

N. dictaeoides. Apparently rare: one at Sandown (Taylor).

N. dromedarius. Rare: near Freshwater (Hodges); Sandown, a few larvae (Prout).

N. ziczac. Fairly plentiful: Landslip (Poole); Sandown (Prout); E. Cowes (Nobbs).

N. trepida. Has been taken at East Cowes on several occasions by Mr. G. Nobbs.

N. chaonia. A few every year at light, Shanklin (Poole); Sandown, larvae once or twice (Prout); E. Cowes (Nobbs).

Phalera bucephala. Most abundant.

Pygaera curtula. Is on More's list.

Thyatira derasa. Common: Shanklin, Sandown, Steyne Wood, Freshwater, &c.

T. batis. Common: its distribution the same as *derasa*.

Cymatophora duplaris. Fairly common: Freshwater (Hodges); Bembridge (Wall. Diary); Greatwoods Copse, Shanklin (Poole).

Asphalia diluta. Fairly common: Sandown (Taylor); Parkhurst, at sugar (Prideaux); E. Cowes (Nobbs); Yarmouth (Bankes); Whitefield Woods (Fox & Taylor); Shanklin (Baker).

A. flavicornis. Rare: at lamps, E. Cowes (Nobbs).

A. ridens. Is on More's list.

NOCTUAE

(233 species are recorded).

Bryophila muralis. Fairly common throughout the Island.

B. perla. Common: resting on walls, and at light.

Moma orion. Rare: Parkhurst, at sugar (Prideaux); near Freshwater (Hodges); Bembridge (Wall. Diary).

Acronycta tridens. Sandown, fairly common (Taylor); Freshwater (Douglas, in Entom., 1904, p. 297); Newport (Morey); Freshwater (E. R. Bankes).

A. psi. Common: Shanklin and Sandown (Poole); Ventnor (Snow); E. Cowes (Nobbs).

A. leporina. Uncommon: one at sugar, near Sandown, July 23, 1892, also one or two larvae (Prout); Bembridge, "on shore fir trees," July 24, 1856; at light, July 31, 1857 (Wall. Diary); one at Alverstone (Taylor); Sandown (Fox); Whippingham and Palmers Brook (Nobbs).

A. aceris. Common: Shanklin, Sandown, E. Cowes, &c.

A. megacephala. Common.

A. alni. Is on More's list, where it is given as "very rare": I know of no recent record.

A. ligustri. Freshwater (Hodges); near Sandown and at St. Helens (Taylor).

A. rumicis. Sandown (Taylor); Freshwater (Hodges); Newport (Morey); Yarmouth (E. R. Bankes).

Diloba caeruleocephala. Taken at street lamps, Shanklin (Poole); Sandown (Fox); E. Cowes (Nobbs).

Leucania conigera. Common: Shanklin (Poole); Sandown (Taylor); Niton (Bloomfield); Freshwater (Hodges).

L. vitellina. Near Sandown, very occasionally (Prout); Freshwater (Hodges, Hanbury, in Entom., 1893, p. 303, &c.); Freshwater, one in September, 1906 (Newman, in Entom., 1906, p. 233); Bembridge, one on September 25, 1858 (Wall. Diary); two at Sandown, 1908.

L. lithargyria. Common: Shanklin, Niton, Sandown, Freshwater, &c.

L. albipuncta. Has been taken in some numbers by the late Mr. J. G. Ross and others, in woods near Freshwater, at sugar (Vic. Hist.). Sandown, almost every year since 1893, when one was taken on July 27—? an immigrant. It has never since appeared before August, usually quite the end of the month. Some seasons only one or two are seen, but in 1896, 1897, and 1902 it was much commoner (Prout).

Commenting on Mr. Prout's remarks, Mr. Bankes points out that 1893 was the earliest season ever known, Lepidoptera appearing, as a rule, a month or more before their usual dates.

L. extranea. Very rare: Mr. Bond captured one specimen at sugar at Freshwater, on September 6, 1859 (Newman's "Moths"). Mr. Taylor took a specimen on September 10, 1907, near Sandown, recorded in the "Ent. Rec.," 1907, p. 303.

L. obsoleta. A few in the marshes near Sandown (Taylor).

L. littoralis. A coast species, and rather uncommon: St. Helens Spit, larvae not rare (Prout).

L. comma. Common: Freshwater, Sandown, Shanklin, &c.

L. straminea. Sparingly in marshes near Sandown (Taylor); occurred in fair numbers in the reed-beds, near Freshwater (Russell E. James, in Ent. Rec., vol. xix, p. 205).

L. impura. Common.

L. pallens. Common.

L. l-album. Sandown, "one taken at sugar by my friend, Mr. S. J. Bell, recorded in the 'Ent. Rec.' for 1901, p. 332" (Prout). I found a second specimen amongst some insects taken near Newport by Mr. P. Wadham, but he could give me no more definite data.

L. favicolor. Near Sandown, one on September 19, 1895, at sugar; one was also taken near Freshwater some years ago by my friend, Mr. F. J. Hanbury (Prout).

Senta maritima. In fair numbers, and with considerable variation, in marshes near Sandown (J. Taylor).

Coenobia rufa. Sandown, very local (Prout).

Tapinostola fulva. Sandown (Prout).

T. hellmanni. Sandown district, two in very widely separated localities, and in different years; its head-quarters still undiscovered (Prout).

Nonagria arundinis. Brading Marshes (Prout); Bembridge (Wall. Diary); Sandown (Taylor).

N. geminipuncta. Reed-beds near Sandown (Taylor); Sandown, Brading Marshes, and near Freshwater, common (Prout); Mr. E. R. Bankes has bred it from larvae and pupae found commonly in reed-beds near Freshwater.

Calamia lutosa. One stray specimen at sugar on the Culvers, September 8, 1897 (Prout); Freshwater (Hodges); one at light, Shanklin, October 3, 1908 (Baker).

Gortyna ochracea. Shanklin Downs (Poole); Sandown (Taylor);

near Blackpan Common (Prout); Parkhurst (Prideaux). The pupae may sometimes be found plentifully in stems of thistles.

Hydroecia nictitans. Common: Shanklin (Poole); Sandown Marshes (Prout); Niton (Bloomfield); E. Cowes (Nobbs).

H. paludis. Brading, rather common (Prout); Freshwater (Bankes); Sandown (Taylor).

H. micacea. Fairly common: Shanklin (Poole); Sandown (Taylor).

Axylia putris. Common: Sandown (Taylor); Freshwater (Douglas, in Entom., 1904, p. 298); Bembridge (Wall. Diary); E. Cowes (Nobbs); Luccombe Common (Poole).

Xylophasia rurea. Common: Sandown (Taylor); Freshwater (Hodges); Bembridge (Wall. Diary); Shanklin (Poole).

X. lithoxylea. Common: Sandown (Taylor); Freshwater (Douglas, in Entom., 1904, p. 297); Parkhurst (Nobbs); Shanklin (Poole).

X. sublustris. Common during some seasons: Sandown (Taylor); Freshwater (Hodges); Shanklin (Poole).

X. monoglypha. Most abundant.

X. hepatica. Fairly common, and distributed throughout the Island.

Dipterygia scabriuscula. Freshwater (Douglas, in Entom., 1904, p. 298).

Aporophyla australis. A fairly plentiful species on the downs, &c. Sandown, Shanklin, Freshwater, and Ventnor are localities in which this insect has been captured. A few of the melanic var. *ingenua* have been taken at different times.

Laphygma exigua. This very rare little *Noctua* was first taken at sugar, at Ventnor, by Mr. A. Maitland; then three or four specimens at Bembridge; three by Mr. Bond at Freshwater; and one or two by Mr. Rogers in the same locality (Newman's "Moths"). One was taken at Sandown, on August 26, 1884 (F. W. Hawes, in Entom., vol. xvii, p. 273). During the autumn of 1906 it was taken in numbers at Sandown by Mr. Taylor and others. A larva was also shaken from wild beet by Mr. Taylor, and emerged on October 16, this being the first larva known to have been taken in Britain (see Ent. Rec., 1907, p. 46). During the same year it was also taken at Shanklin and Freshwater (Entom., 1906, p. 233). The species did not appear in 1907 or 1908.

Neuria reticulata. A few every year at Sandown (Taylor); Newport (Morey); Shanklin (Poole).

Neuronion popularis. Common at light, and resting on grass: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges).

Heliophobus hispidus. Scarce: Freshwater (Wall. Diary and Hodges).

Charaeas graminis. Rare: single specimens at Sandown and Ventnor (Taylor).

Cerigo matura. Common at Sandown (Taylor).

Luperina testacea. Very common: a dark variety at Sandown (Taylor).

L. dumerilii. Very rare: three at Freshwater (H. Rogers, in Ent. Intel., 1859, p. 35).

L. cespitis. Taken sparingly: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges).

Mamestra abjecta. Rare: Sandown, three or four only (Prout); near Yarmouth (Tutt, in Entom., 1889, p. 236); St. Helens (Fox).

M. sordida. Common: Sandown (Taylor); Freshwater (Hodges).

M. brassicae. Very abundant.

M. persicariae. Common: Shanklin (Poole); Sandown (Prout).

Apamea basilinea. Abundant: Shanklin, Ventnor, Sandown, &c.

A. gemina. Plentiful: Sandown, Shanklin, Freshwater, Brading.

A. unanimis. One only, near Sandown (Taylor); St. Helens (Fox).

A. leucostigma. One only, at sugar, Sandown, August 25, 1906 (Prout).

A. didyma. Swarms at Sandown (Taylor); also Shanklin, Freshwater, Newport, &c.

Miana strigilis. Most abundant.

M. fasciuncula. Plentiful: Sandown, Shanklin, Freshwater, &c.

M. literosa. Common.

M. bicoloria. Common and variable.

M. arcuosa. Bembridge (Wall. Diary); Sandown, one at light (Fox).

Celaena haworthii. One uncommonly large specimen, taken by Mr. Taylor near Sandown, September 16, 1907 (see Ent. Rec., 1907, p. 303).

Grammesia trigrammica. So abundant as to be a nuisance at sugar near Shanklin in 1907, and common throughout the Island. One of the var. *bilinea* was taken at Sandown by Mr. Taylor.

Stilbia anomala. Is given as an Isle of Wight species by More: I have no further information.

Caradrina morpheus. Not common: Shanklin (Poole); Sandown (Taylor); Freshwater (Douglas, in Entom., 1904, p. 298).

C. alsines. Not common: Sandown (Taylor); Luccombe Common, and Greatwoods Copse near Shanklin (Poole).

C. taraxaci. Plentiful at Sandown (Taylor); Niton (Bloomfield); Freshwater (Hodges); Shanklin (Poole).

C. ambigua. Sandown, almost every year since 1893, though generally quite sparingly (Prout); Freshwater (Hodges).

C. quadripunctata. Common: Sandown (Taylor); Newport (Wadham); Shanklin (Poole).

Acosmetia caliginosa. Recorded from the Isle of Wight . . . in the past (South's "Moths").

Rusina tenebrosa. A few at Sandown (Taylor); Freshwater (Douglas, in Entom., 1904, p. 298); E. Cowes (Nobbs); Shanklin (Poole); Ventnor (Fox & Peck).

Agrotis vestigialis. Very rare. It is given on More's list, and the Isle of Wight is mentioned as a locality in Newman's "Moths."

A. puta. Common: Shanklin, Sandown, Freshwater, &c.

A. suffusa. Common.

A. saucia. Plentiful throughout the Island during some seasons, almost absent at other times.

A. segetum. Very common.

A. lunigera. Taken sparingly at Sandown, commoner during some seasons (Taylor); Freshwater, common (Hodges). Mr. Russell E. James has recorded it as abundant at Freshwater (Ent. Rec., vol. xix, p. 204).

A. exclamationis. Very common.

A. corticea. Common: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges).

A. cinerea. Very uncommon: one only, at Ventnor (Maitland); Sandown (Taylor); Freshwater (Hodges); Bembridge, at light, June, 1857 (Wall. Diary); Shanklin (Poole); six at Freshwater, July, 1907 (Russell E. James, in Ent. Rec., vol. xix, p. 205); Ventnor (Fox).

A. ripae. Larvae very common at St. Helens Spit (Prout); larvae near Freshwater (Hodges). Some years ago larvae were very abundant at Yarmouth, but are now scarce there owing to the disappearance of their food-plants (E. R. Bankes).

A. nigricans. Taken sparingly as a rule: Shanklin (Poole); Sandown, was very common in the early nineties (Prout); Sandown (Taylor); E. Cowes (Nobbs); Freshwater (James, in Ent. Rec., vol. xix, p. 205).

A. tritici. Sandown, not very common (Prout & Taylor). The var. *aquilina* at Shanklin (Poole); and Sandown (Prout).

A. obelisca. Fairly frequent: Ventnor (Maitland); Newport (Morey); Niton (Bloomfield, *teste* Prout); Freshwater (Hodges).

A. strigula. Near Sandown (Taylor).

A. simulans. Very rare: is on More's list.

A. lucerneae. Recorded from Freshwater by Hodges and others. Barrett states that "the Isle of Wight produces deep slate-coloured specimens."

Noctua glareosa. Fairly plentiful: Sandown (Taylor); Freshwater (Hodges).

N. plecta. Common at light, &c.: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges).

N. flammatra. Very rare: of the three known British examples of this species, two were captured in the Isle of Wight—one at

Freshwater in 1859 (Ent. Intel., vol. vi, p. 164, & vol. vii, p. 35), and one in 1876 (South's "Moths").

The specimen recorded from Freshwater in "Ent. Mo. Mag.," vol. xvii, p. 135, was certainly not British.—E. R. Banks.

N. c-nigrum. Abundant: Sandown, Yarmouth, Shanklin, Newport, Freshwater, Cowes, &c.

N. ditrapezium. The Isle of Wight is given as a locality in Newman's "Moths," but the record wants confirmation.

N. triangulum. Shanklin and Luccombe Common (Poole); Sandown (Prout); Freshwater (Douglas, in Entom., 1904, p. 297).

N. stigmatica. Bembridge, August 21, 1857 (Wall. Diary)—wants confirmation.

N. brunnea. Freshwater (Hodges).

N. festiva. Abundant.

N. dahlii. Is given as an I. of W. species in Newman's "Moths."

N. rubi. Common: Shanklin (Poole); Yarmouth (Banks); Sandown (Taylor); Freshwater (Hodges).

N. umbrosa. Sandown, in some of the damper spots (Prout).

N. baia. Sandown, &c., rather common (Prout); Shanklin (Poole).

N. castanea. Uncommon: Bembridge (Wall. Diary). Yarmouth, taken rather sparingly, September to October, 1905. There being no *Calluna* or *Erica* anywhere near, the larvae presumably feed there on *Salix*. All the moths seen were referable to var. *neglecta* (E. R. Banks).

N. xanthographa. Very common: Shanklin, Sandown, Freshwater, Cowes, Yarmouth, &c.

Triphaena ianthina. Common.

T. fimbria. Pretty frequent: Ventnor, Sandown, Shanklin, Cowes, Freshwater.

T. interjecta. Fairly common: Ventnor, Shanklin Down, Sandown, Freshwater.

T. orbona. Cowes (C. Morley); Sandown (Taylor); Freshwater (Hodges); Parkhurst, one at sugar (Prideaux); Ventnor (Maitland).

T. comes. Common.

T. pronuba. Exceedingly common.

Amphipyra pyramidea. Plentiful.

A. tragopogonis. Plentiful.

Mania typica. Common at light, &c.: Shanklin (Poole); Sandown (Taylor); E. Cowes (Nobbs).

M. maura. Fairly common: Shanklin, Sandown, Newport, Whippingham, &c.

Panolis piniperda. Parkhurst Forest, at sallows (Prideaux); Sandown, one only, at flowers of blackthorn on the west cliff (Prout); E. Cowes (Nobbs); one at light, Shanklin (Poole).

Pachnobia leucographa. Rare and local: Isle of Wight (Newman's "Moths").

P. rubricosa. Sandown (Prout); E. Cowes (Nobbs); Shanklin at sallow bloom (Poole).

Taeniocampa gothica. Common at willows: Shanklin, Sandown, Parkhurst, E. Cowes.

T. incerta. At willow bloom, not so common as the last: Shanklin (Poole); near Sandown (Prout).

T. populeti. Not common: at willows near Shanklin (Poole).

T. stabilis. Abundant.

T. gracilis. Fairly common: Sandown (Taylor); Parkhurst (Prideaux); Shanklin (Poole).

T. miniosa. Uncommon: Parkhurst (Prideaux, *teste* Prout); Bembridge (Wall. Diary); E. Cowes (Nobbs).

T. munda. Infrequent: Sandown (R. H. Fox); pupae at E. Cowes (Nobbs); the var. *immaculata* at Cowes (Nobbs, *teste* Prout).

T. pulverulenta. Common: Shanklin, Sandown, Brading, E. Cowes.

Orthosia suspecta. Sandown, one at willow, July 19, 1897 (Prout).

O. upsilon. Cowes (Nobbs, *teste* Prout).

O. lota. Common: Shanklin, Sandown, Freshwater, E. Cowes.

O. macilenta. Common: Shanklin, Sandown, E. Cowes, Bembridge.

Anchocelis rufina. Sandown, a few (Taylor); Yarmouth, not uncommon (E. R. Banks).

A. pistacina. Common at willow blossom, &c.

A. lunosa. Sandown, Newport, Yarmouth, Freshwater, Ventnor, E. Cowes, &c.

A. litura. Freshwater (Hodges).

Cerastis vaccinii. Swarms at willow blossom.

C. spadicea. Swarms at willow blossom.

Scopelosoma satellitia. Abundant.

Dasycampa rubiginea. Rare: Bembridge, a few (Wall. Diary); eight at willow here, October 23 and 26, 1866 (James Ingram, Nettlestone, in Entom., vol. iii, p. 43); one near Sandown, October 25, 1906 (Taylor).

Oporina croceago. Parkhurst Forest, at willows (Prideaux, *teste* Prout).

Xanthia citrigo. One, flying at dusk by the side of the Blackgang road, close to Niton High Street, September 7, 1897 (W. Bloomfield).

X. fulvago. Infrequent: four specimens at Sandown (Taylor); Centurion's Copse (Prout); E. Cowes (Nobbs); Yarmouth (Banks); Shanklin (Poole).

X. flavago. Sandown, Alverstoke, Brading, &c. Larvae common in willow catkins (Prout); Yarmouth (Banks).

X. aurago. Isle of Wight (Newman's "Moths").

X. gilvago. Rare: Sandown, one at willow, September 22, 1904 (Prout). Mr. Taylor also took one at Sandown in 1907.

X. circellaris. Common: Sandown, Yarmouth, Shanklin, Freshwater, Ventnor, E. Cowes.

Tethea subtusa. Is on More's list.

T. retusa. Isle of Wight (Newman's "Moths").

Calymnia trapezina. Common: Shanklin, Sandown, E. Cowes.

C. pyralina. Rare: Bembridge (Wall. Diary).

C. diffinis. Parkhurst (Prideaux, *teste* Prout); Freshwater (Hodges); Bembridge (Wall. Diary); E. Cowes (Nobbs).

C. affinis. Sandown, not rare (Prout); St. Lawrence (Bloomfield); Freshwater (Hodges); Bembridge (Wall. Diary); E. Cowes (Nobbs).

Eremobia ochroleuca. Bembridge (Wall. Diary); Sandown, at valerian (R. H. Fox).

Dianthoecia capsincola. Common; mostly found in the larval stage: Sandown, Shanklin, &c.

D. cucubali. Sandown, occasionally, at sugar; young larvae in seed-pods of *Silene inflata*—believed to feed on the leaves later (Prout); Freshwater (Hodges).

D. carpophaga. Rare: Sandown, larvae in *Silene inflata* (Prout).

Hecatera serena. Occasionally: Sandown, larvae on *Crepis* (Prout); Shanklin (Poole); Cowes (Nobbs).

Polia flavicincta. Is on More's list; one only at Shanklin, Oct. 1, 1908 (Poole).

Dasypolia templi. Very rare (More).

Epunda lichenea. St. Helens Spit, two or three larvae found under sand by day; a friend bred a specimen from one taken feeding on nettles at night, near Yaverland (Prout).

E. lutulenta. Not common: Sandown (Taylor); Freshwater (Hodges); Bembridge (Wall. Diary); Ventnor (R. H. Fox); Yarmouth, not uncommon, at any rate in 1905 (Banks).

E. nigra. Taken in some numbers: Sandown (Taylor); Carisbrooke (Prideaux); golf links, Ventnor (Taylor); Yarmouth (Banks); Shanklin Downs (Poole).

Cleoceris viminalis. Bembridge (Wall. Diary); one at St. Helens (Fox).

Miselia oxyacanthae. Common at ivy blossom: Shanklin, Sandown, Yarmouth, Freshwater, Bembridge, Whippingham.

Agriopis aprilina. Common.

Euplexia lucipara. Fairly common: Shanklin, Sandown, Freshwater, Whippingham.

Phlogophora meticulosa. Abundant.

Aplecta prasina. Fairly plentiful: Shanklin (Poole); Freshwater (Hodges); Bembridge (Wall. Diary); E. Cowes (Nobbs).

A. occulta. Bembridge, August 21, 1857 (Wall. Diary).

A. nebulosa. Common: Shanklin (Poole); Freshwater (Hodges); Bembridge (Wall. Diary); Parkhurst (Nobbs).

A. advena. Freshwater, sparingly (Hodges); Bembridge (Wall. Diary). Also recorded in a short list of species observed at Bonchurch and Ventnor (Edw. Smith, in Ent. Weekly Intel., vol. ii, pp. 27-28).

Hadena adusta. Infrequent: Sandown, at sugar (Taylor); Bembridge (Wall. Diary).

H. protea. Sparingly as a rule, sometimes more common: Sandown (Taylor); Freshwater (Hodges); Bembridge (Wall. Diary); Parkhurst (Nobbs); Yarmouth, plentiful and very variable in 1905 (Bankes).

H. dentina. Abundant. A magnificent dark, almost black, form, recorded from Freshwater in "Ent. Rec.," vol. iv, p. 337.

H. trifolii. Fairly common: Shanklin (Poole); Sandown (Taylor).

H. dissimilis. Common in the marshes near Sandown (Taylor); Freshwater (Rogers & Hodges).

H. oleracea. Common.

H. pisi. A few larvae at Lake (Taylor).

H. thalassina. Freshwater (Hodges).

H. contigua. Rare (More).

H. genistae. Common some years at Sandown (Taylor); Bembridge (Wall. Diary); Freshwater (H. Rogers, in Ent. Intel., 1859, p. 35); Ventnor (Peck).

H. peregrina. Three specimens have been recorded, all from Freshwater: the first in 1857 (see Ent. Ann., 1859, p. 147); the second in 1859; and the third about 1876. Mr. Bankes has drawn my attention to the record of a specimen at Lewes in Sussex (Ent. Mo. Mag., vol. v, p. 150), so that the Isle of Wight cannot claim to be the only British locality.

Xylocampa areola. Shanklin (Poole); Sandown (Prout); Whippingham (Nobbs).

Calocampa vetusta. Common: Sandown, Ventnor, Whippingham.

C. exoleta. In fair numbers: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges); Bembridge (Wall. Diary).

Xylina ornithopus. Sandown, sparingly most years, common in 1906 (Taylor); Bembridge (Wall. Diary); Yarmouth, uncommon (Bankes).

X. semibrunnea. Bembridge (Wall. Diary).

X. socia. Is mentioned by More.

Asteroscopus sphinx. At lamps, Whippingham (Nobbs).

Cucullia verbasci. Larvae sometimes plentiful at Alverstoke (Taylor); Brading Down, Freshwater, &c., in larval state (Prout); Whippingham (Nobbs).

C. scrophulariae. Is on More's list, but most probably in error.

C. absinthii. Bembridge, larvae in September, 1858 (Wall. Diary). Maitland states that larvae were common near Ventnor, but recent search year after year has been in vain.

C. chamomillae. On the authority of More.

C. umbratica. Common: Shanklin and Parkhurst (Poole); a few at Sandown (Taylor); Whippingham (Nobbs); Yarmouth (Bankes).

Gonoptera libatrix. Common: Shanklin, Sandown, Whippingham, Newport.

Habrostola tripartita. Shanklin (Poole); Sandown (Prout).

H. triplasia. Is recorded by More.

Plusia chrysitis. Common, at flowers of dead-nettle, &c.: Shanklin (Poole); Sandown and Brading (Prout); Whippingham (Nobbs).

P. festucae. Rare: one at Brading (Taylor); Culver, two at sugar (Prout); Freshwater (Hodges).

P. iota. Uncommon: Shanklin (Poole); Sandown (Fox and Prout); Newport (Morey); Bembridge (Wall. Diary).

P. pulchrina. Is given by More.

P. gamma. Most abundant.

Heliaca tenebrata. St. Boniface Down (Draper); Bembridge (Wall. Diary).

Heliothis dipsacea. One specimen at Whippingham (Nobbs).

H. peltigera. Sandown, larvae and imagines in 1897 (Prout); Sandown, a few in 1906 (Taylor, &c.); Freshwater (Hodges); and Freshwater (Entom., 1906, p. 233).

H. armigera. Rare: Sandown, latter part of September, 1863 (Zool., p. 8408); Freshwater (Hodges); Freshwater (H. Rogers, in Ent. Intel., 1859, p. 35); Bembridge, a few in 1855, 1856, and 1858 (Wall. Diary); Sandown, one at *Arbutus* blossom (R. H. Fox).

Chariclea umbra. Sparingly: Sandown (Taylor); Ventnor (Prout); Niton (Bloomfield); Freshwater (Hodges); Gurnard (Nobbs); Shanklin (Poole).

Acontia luctuosa. Fairly frequent: Pelham Woods (Snow); Sandown and Brading (Prout); Bembridge (Wall. Diary); &c.

Erastria fasciana. Freshwater (Douglas, in Entom., 1904, p. 298); Bembridge (Wall. Diary).

Thalpochares ostrina. Very rare: near Bembridge, June 14, August 11, and August 24, 1858 (Wall. Diary).

T. paula. Very rare: Freshwater (Vic. Hist.).

One was taken at Freshwater by Mr. E. G. Moore, and recorded by Mr. C. G. Barrett in the "Ent. Mo. Mag.," vol. x, p. 19 (1873). The entry in the "Vic. Hist." was probably founded on this record.—E. R. BANKES.

Phytometra viridaria. Sandown and Parkhurst Forest (Prout); Ventnor (Peck); Parkhurst (C. Morley); at lamps, E. Cowes (Nobbs).

Euclidia mi. Abundant throughout the Island.

E. glyphica. Local: I only know it from Gurnard Bay, and the rough slopes of the cliffs near by.

Catephia alchymista. Very rare: a single specimen at sugar, Bembridge, September 13, 1858 (Wall. Diary).

Catocala fraxini. Rare: single specimens have been captured at irregular intervals; the most recent are—two taken at Cowes, September, 1900, by H. Harpur Crewe (Entom., 1900, p. 308); and

a very fresh specimen captured by F. Draper at Ventnor, on August 13, 1906.

C. nupta. Common: Shanklin, Yarmouth, Sandown, Newport.

C. promissa. Rare: has been taken at Hampstead by Mr. P. Wadham.

C. sponsa. Sandown, one at sugar—much battered—July 22, 1893 (Prout).

Aventia flexula. Sandown (Taylor); Bembridge (Wall. Diary).

Toxocampa pastinum. Not common: near Yarmouth (Hodges); north of Parkhurst Forest (Prideaux); Bembridge (Wall. Diary); Haven Street (Nobbs); Freshwater (H. Rogers, in Ent. Intel., 1859, p. 35).

Rivula sericealis. Sandown (Prout); Yarmouth (W. Bloomfield, *teste* Prout); Shanklin (Poole).

Zanclognatha grisealis. Fairly common near Shanklin—Greatwoods Copse, &c. (Poole).

Z. tarsipennalis. Sandown (Prout); Shanklin (Poole).

Pechypogon barbalis. Parkhurst Forest (Poole).

Hypena rostralis. Brading, Culver, &c. (Prout); Newport (Morey).

H. proboscidalis. Common: Shanklin, Sandown, Brading Down, &c.

Hypenodes albistrigalis. Parkhurst Forest (Prout); Bembridge (Wall. Diary); Sandown (Rev. A. C. Hervey, M.A., in Proc. Hants F.C., 1888).

H. costaestrigalis. Sandown, very occasionally (Prout); Bembridge (Wall. Diary).

Brephos parthenias. Taken at E. Cowes by Mr. G. Nobbs.

B. notha. Taken by Mr. Nobbs in the same locality as *parthenias*.

GEOMETRAE

(190 species are recorded).

Urapteryx sambucaria. Abundant.

Epione apiciaria. Not rare under cliffs between Sandown and Shanklin, and occasionally elsewhere (Prout); Niton (Bloomfield); near Yarmouth (Tutt, in Entom., 1889, p. 236).

E. advenaria. One specimen in Parkhurst Forest, June 9, 1907 (Poole).

Rumia luteolata. Most abundant.

Yenilia macularia. Common in most of the woods: Parkhurst, Bordwood, America Woods, &c.

Angerona prunaria. Bembridge (Wall. Diary); near Freshwater (Hodges).

Metrocampa margaritaria. Common: Shanklin, Bordwood, &c. (Poole); Bembridge (Wall. Diary); Cowes (Nobbs).

Ellopia prosapiaria. Near Freshwater, and in Parkhurst Forest (Hodges).

Eurymene dolabraria. Ninham, apparently uncommon (Poole); Sandown (Fox); Bembridge (Wall. Diary); Cowes (Nobbs).

Pericallia syringaria. Not common: Bembridge (Wall. Diary); Newport (Morey); Sandown (Fox); Cowes (Nobbs).

Selenia bilunaria. Common: Shanklin at light (Poole); Sandown (Taylor); Cowes (Nobbs).

S. tetralunaria. Shanklin, at light, not very common (Poole); Cowes (Nobbs).

Odontopera bidentata. Common: Shanklin (Poole); Sandown (Taylor); Cowes (Nobbs).

Crocallis elinguararia. Common: Shanklin (Poole); Sandown (Prout); Newport (Morey); Cowes (Nobbs).

Eugonia alniaria, L. = *tiliaria, Bork.* Fairly common at light: Shanklin (Poole); Sandown, at light, larvae on alder (Prout); Cowes (Nobbs).

E. fuscantaria. Cowes (Nobbs); Shanklin (Poole).

E. erosaria. Rare (More); Bembridge (Wall. Diary).

E. quercinaria. Uncommon: Shanklin, at light (Poole); Sandown and Centurion's Copse (Prout); Cowes (Nobbs).

Himera pennaria. Common at Shanklin, at light (Poole); Cowes (Nobbs); Sandown (Taylor).

Phigalia pedaria. Shanklin, a few only, at light (Poole); Cowes (Nobbs); Bembridge (Wall. Diary).

Amphidasys strataria. Not common: Sandown, one on a lamp, April 14, 1891 (Prout); Sandown (Fox); Cowes (Nobbs); Shanklin, one taken by Mr. Long.

A. betularia. Fairly common: Shanklin (Poole); Pelham Woods (Snow); Sandown (Taylor).

Hemerophila abruptaria. Common: Shanklin, Sandown, Brading Down, Newport, Cowes, &c.

Cleora lichenaria. Common: St. George's Down, Sandown, Alverstoke, Bordwood, Freshwater, Cowes, Shanklin, Luccombe, &c.

Boarmia repandata. Common: Totland, Shanklin, Sandown, Cowes, &c.

B. gemmaria. Common: Shanklin, Sandown, Cowes, &c.

B. abietaria. Rare (More).

B. roboraria. Taken at Cowes (Nobbs).

B. consortaria. Cowes (Nobbs).

Tephrosia consonaria. Local at Cowes (Nobbs, *teste* Prout); Freshwater (Hodges, *teste* Prout).

T. crepuscularia. Has been taken near Newport by Mr. P. Wadham; at Cowes by Mr. Nobbs; and I have taken one at Shanklin.

T. bistortata, Goeze = *laricaria, Doubleday* = *biundularia, Bork., Esp.*, on South's list. Bembridge, April and July, 1856, and one on October 2, 1856 (Wall. Diary); between Ventnor and Niton (Prout); Freshwater (Hodges); Cowes (Nobbs).

Gnophos obscuraria. Common: Undercliff, Sandown, St. Boniface Down, Niton, Freshwater, Ventnor.

Pseudoterpna pruinata. Fairly common: Shanklin and St. Boniface Down (Poole); Sandown (Taylor).

Geometra papilionaria. Freshwater, rare (Hodges); Bembridge (Wall. Diary); near Sandown (R. H. Fox).

G. vernaria. Common: Shanklin (Poole); Brading Down, &c. (Prout); Freshwater (Douglas, in Entom., 1904, p. 298).

Phorodesma pustulata. Parkhurst Forest (Prout); Freshwater (Hodges); Cowes (Nobbs).

Nemoria viridata. Ventnor (Peck).

Iodis lactearia. Common: Sandown (Taylor); near Freshwater (Hodges); Bembridge (Wall. Diary); Ventnor (Peck).

Hemithea strigata. Common: Shanklin (Poole); Sandown (Taylor); Freshwater (Hodges); Cowes (Nobbs).

Zonosoma porata. Rare (More); Sandown, &c., occasionally (Prout); Bembridge (Wall. Diary).

Z. punctaria. Rare (More); Centurion's Copse (Prout); near Sandown (Fox).

Z. linearia. Calbourne: I have also certainly taken it elsewhere, but have made no notes (Poole).

Z. annulata. Near Whitefield Woods, Brading; one at Sandown on a wall (Prout); Bembridge (Wall. Diary); Yaverland (Fox).

Z. orbicularia. Bembridge, July 7, 1858 (Wall. Diary).

Asthene luteata. Not common: Newport (Wadham); Bembridge (Wall. Diary); Brading Down (Poole).

A. candidata. Common: Freshwater (Bankes); Carisbrooke, Bordwood, Centurion's Copse, Shanklin, &c. (Poole).

Eupisteria obliterata. I have taken one specimen only at Shanklin, at light, August 7, 1908. Blackpan Common (Prout).

Yenusia cambrica. Recorded from Ventnor—but this example may have been an escape (R. South).

Acidalia dimidiata. Common at Sandown (Taylor).

A. bisetata. Sandown, very common (Prout); Pelham Wood (Poole).

A. trigeminata. Is on More's list.

A. interjectaria (*dilutaria* of South's list). Sandown, common (Prout).

A. humiliata. This species, known as the "Isle of Wight Wave," has its only ascertained British locality at Freshwater, where it was discovered by Mr. A. J. Hodges, and occurs in some numbers.

A. virgularia. Shanklin (Poole); Sandown (Taylor).

A. ornata. A chalk species not uncommon in the Isle of Wight (Vic. Hist.).

A. marginepunctata. Common: Shanklin (Poole); Sandown (Taylor); Niton and Yarmouth (W. Bloomfield); Ventnor (Peck).

A. straminata. Is on More's list.

This is probably an error.—E. R. BANKES.

A. subsericeata. Limpet Run, near Sandown, not uncommon (Prout); Carisbrooke (Prideaux).

A. immutata. One only under the cliff between Sandown and Shanklin (Prout); Bembridge, June 11, 1858 (Wall. Diary)—this last in error for *remutaria*?

A. remutaria. Sandown (Taylor).

A. strigilaria. Is on More's list.
Most probably in error.—E. R. BANKES.

A. imitaria. Sandown, not uncommon (Prout).

A. emutaria. Taken at Yarmouth by Mr. Hodges and others; St. Helens (Fox).

A. aversata. With the var. *spoliata*, is common: Shanklin, Sandown, Freshwater, Cowes, &c.

A. inornata. Blackpan Common, one only (Prout).

A. degeneraria. Sandown, one at sugar, September 5, 1902, recorded in "Ent. Rec.," vol. xiv, p. 274 (Prout).

A. emarginata. Sandown, rare; Herringford, one only (Prout).

Timandra amataria. Common: Shanklin (Poole); Sandown (Taylor); Cowes (Nobbs).

Cabera pusaria. Common: Bordwood, Parkhurst, Shanklin, Sandown, Centurion's Copse, &c.

C. exanthemata. Common at Sandown (Taylor).

Bapta temerata. Taken at Ventnor in 1879 (Entom., vol. xiii, p. 39, R. South); Shanklin, locally common (Poole).

B. bimaculata. Rare (More); one at Bordwood, 1908 (G. T. Woods).

Macaria alternata. Rare (More).

M. notata. Sandown (R. H. Fox).

M. liturata. Not common: Parkhurst.

Halia vauaria. Common: Shanklin, Cowes, Sandown, &c.

Strenia clathrata. Near Sandown, one only (Prout); Totland, swarming in early July, 1904 (Douglas, in Entom., 1904, p. 298); Bembridge (Wall. Diary); Yarmouth, 1884 (Bankes).

Panagra petraria. Common: Shanklin, Sandown, Parkhurst, &c.

Numeria pulveraria. Rare (More); Apes Down (Prideaux, *teste* Prout).

Selidosema ericetaria. Is on More's list. Barrett in "Lep. Brit.," vol. vii, p. 34, says that it is "abundant in the New Forest, and also in the Isle of Wight."

Ematurga atomaria. Abundant.

Bupalus piniaria. Common at Parkhurst, and I have taken a few in Shanklin.

Minoa murinata. Rare (More).

Sterrha sacraria. Nearly opposite Hurst Castle, one beaten from furze and grass by J. C. Dale (Ent. Mo. Mag., vol. ii, p. 133). One taken at St. Helens, September 9, 1865, and another seen in the

same locality (J. Ingram, in Ent. Mo. Mag., vol. ii, p. 134). A fresh specimen was taken in the Isle of Wight by Mr. J. Pristo, on May 7, 1867 (Entom., vol. iii, p. 289); and another by him on September 3, 1867 (Entom., vol. iii, p. 348). One taken at Ventnor in 1859, and another taken "in the east of the Island"—presumably in 1865 (A. Owen, in Entom., vol. ii, pp. 342-3). Two taken in the Isle of Wight in August, 1867, by Mr. H. Rogers (Entom., vol. iii, pp. 347-8).

Aspilates ochrearia. Common: St. Boniface and Shanklin Downs, Sandown, Niton, Ventnor, Cowes, Freshwater.

A. gilvaria. Cowes (Nobbs).

Abraxas grossulariata. Very abundant: in the towns it seems to have almost entirely deserted its old food plants for the Japanese *Eunymus*.

A. sylvata. Fairly common at Pelham Woods (Draper); Parkhurst (Poole).

Ligdia adustata. Brading and Bembridge Downs and vicinity (Prout); Cowes (Nobbs).

Lomaspilis marginata. Common: Bordwood, Sandown, Newport, Shanklin, &c.

Hybernia rupicaprararia. Common: Sandown, Cowes, &c.

H. leucophaearia. Bembridge (Wall. Diary); Cowes (Nobbs).

H. aurantiaria. Is on More's list.

H. marginaria. Abundant: Shanklin, Sandown, Cowes, &c.

H. defoliaria. Abundant: the males at light; they vary to a remarkable degree.

Anisopteryx aescularia. Shanklin (Poole); Sandown (Prout); Cowes (Nobbs).

Cheimatobia brumata. Very common: Shanklin, Sandown, Cowes, &c.

Oporabia dilutata. Common at light, and resting on tree trunks: Shanklin, Sandown, Cowes, Centurion's Copse, &c.

Larentia didymata. Sandown, common (Prout); common at Shanklin and Bordwood (Poole).

L. multistrigaria. One at Sandown (Taylor).

L. olivata. Pelham Woods, Ventnor, one on August 26, 1903 (Prout).

L. viridaria. Common: Shanklin, Sandown, Ventnor.

Emmelesia affinitata. Common: Newport, Sandown, Bembridge, Shanklin, Ventnor, Centurion's Copse.

E. alchemillata. Sandown, larvae sometimes abundant on *Galeopsis tetrahit* (Prout).

E. albulata. Common: Shanklin Down (Poole); Bonchurch (Wall. Diary).

E. decolorata. Near Shanklin (Poole); Sandown (Prout).

E. unifasciata. Sandown, larvae usually abundant (Prout).

E. adaequata. Isle of Wight (Meyrick's Handbook), but Mr. Prout suggests that this is probably an error.

Eupithecia venosata. Sandown, &c., larvae in *Silene inflata* (Prout).

E. oblongata. Common at Sandown (Taylor); Cowes (Nobbs); Yarmouth, bred from larvae on *Aster tripolium* (Bankes).

E. succenturiata. Sandown, apparently rather local (Prout); Bordwood (Poole).

E. subfulvata. Sandown (Prout); Shanklin (Poole).

E. plumbeolata. Bordwood, larvae in *Melampyrum* (Prout).

E. isogrammaria. Sandown (Taylor); Brading Down (Poole).

E. egenaria. Has occurred in the I. of W. (Stainton's Manual).

It is, however, uncertain to which of our British species Stainton applied the name. Meyrick (H.B. Brit. Lep., p. 196) enters *egenaria*, H.S., as synonymous with *helveticaria*, Bdv., but Staudinger and Rebel (Cat., p. 311) treat it as quite distinct from the latter, and as unknown in Britain.—E. R. BANKES.

E. castigata. Sandown (Prout); Yarmouth, bred from larvae on *Althaea officinalis* (Bankes).

E. pimpinellata. Culver, Brading Down, &c. (Prout); Bembridge (Wall. Diary).

E. pusillata. Is on More's list.

E. campanulata. Isle of Wight, local (Meyrick's Handbook).

E. innotata. Sandown, one bred, recorded in "Ent. Rec." for 1904, p. 336 (Prout).

E. indigata. Rare (More).

E. subnotata. Sandown, larvae common (Prout); Shanklin, at light (Poole).

E. vulgata. Common: Sandown (Taylor); Appley (C. Morley); Shanklin (Poole).

E. albipunctata. Sandown, local (Prout); Shanklin (Poole).

E. expallidata. Bembridge (Wall. Diary)—requires confirmation.

E. absinthiata. Common at Sandown (Taylor); Yarmouth, bred from larvae on *Aster tripolium* (Bankes).

E. minutata. Is on More's list. "Possibly in error for *absinthiata*" (Prout).

E. assimilata. Sandown (Prout).

E. abbreviata. Sandown (Prout).

E. dodoneata. Cowes (Wall. Diary); Shanklin, 1908 (Poole).

E. exigua. Sandown (Prout).

E. pumilata. Sandown (Taylor); Shanklin (Poole).

E. coronata. Sandown (Taylor).

E. rectangulata. Is on More's list.

E. anglicata, H.-S. = *ultimaria*, South, nec. Bdv. = *stevensata*, Webb. (? *sobrinata* var.). Freshwater, one in September, 1904 (Mutch, in Entom., 1905, p. 161).

Lobophora sexalisata. Sandown (Prout).

L. halterata. Bembridge, April 7, 1856 (Wall. Diary)—"requires confirmation" (Prout).

L. viretata. Shanklin (Poole); Freshwater, one on September

8, 1904 (Prout); Carisbrooke, larvae from ivy, October, 1894 (Prideaux, *teste* Prout).

***Thera variata*.** Sandown, &c. (Prout); Parkhurst and Shanklin (Poole).

***T. firmata*.** Bembridge, August 20, 1856 (Wall. Diary).

***Hypsipetes trifasciata*.** Sandown (Taylor).

***H. sordidata*.** Shanklin (Poole); Cowes (Nobbs); Sandown (Taylor).

***Melanthia bicolorata*.** Sandown (Taylor); Brading Down (Prout).

***M. ocellata*.** Common: Shanklin, Sandown, Luccombe, Ventnor, Cowes.

***M. albicillata*.** Rare (More); Sandown (Fox).

***Melanippe procellata*.** Common: Brading Down, St. Boniface Down, just above Ventnor Station, Shanklin (Poole); Cowes (Nobbs).

***M. unangulata*.** Sandown, locally common (Prout).

***M. rivata*.** Sandown (Taylor); Freshwater (Hodges); Luccombe (Poole).

***M. sociata*.** Common: Sandown (Taylor); Cowes (Nobbs); Shanklin (Poole).

***M. montanata*.** Common: Bordwood, Shanklin, Hampstead, Parkhurst, the Landslip, &c.

***M. galiata*.** Common at Sandown (Taylor); Ventnor (Peck).

***M. fluctuata*.** Abundant: Shanklin (Poole); Sandown (Taylor).

***Anticlea rubidata*.** Common: Shanklin, Sandown, Carisbrooke, Freshwater, Ventnor.

***A. badiata*.** Common: Sandown (Taylor); Newport (Morey); Shanklin (Baker).

***A. nigrofasciaria*.** Brading, one on a fence (Prout).

***Coremia designata*.** Near Shanklin (Poole); Sandown (Prout).

***C. ferrugata*.** Common: Shanklin (Poole); Sandown (Taylor).

***C. unidentaria*.** Common at Sandown (Taylor); Shanklin (Poole).

***C. quadrifasciaria*.** Rare (More).

***Camptogamma bilineata*.** Abundant.

***C. fluviata*.** Rare: Sandown, one on August 5, 1892 (Prout); Bembridge, one on August 30, 1856, recorded by Dr. Wallace (Ent. Weekly Int., vol. i, p. 158); several in 1858 (Wall. Diary); Shanklin, one on November 3, 1907, three in 1908 (Poole).

***Phibalapteryx tersata*.** Shanklin and Brading Down (Poole); Brading, rather common (Prout).

***P. vittata*.** Near Freshwater (Hodges); Bembridge (Wall. Diary); Brading (Heath).

***P. vitalbata*.** Brading, &c. (Prout); Ventnor (Peck); near Sandown (Poole).

***Triphosa dubitata*.** One at Sandown (Taylor); one at sugar, Culver Down, September 8, 1897 (Prout).

***Eucosmia certata*.** Is on More's list.

E. undulata. Rare: Sandown, one on July 21, 1891 (Prout); Bembridge (Wall. Diary). Mr. Bevis has taken it in the Island—he thinks at Marvel.

Cidaria siterata. Bembridge (Wall. Diary).

C. miata. Bembridge (Wall. Diary).

C. picata. Sandown (Prout); Shanklin, and lane at base of Brading Down (Poole).

C. corylata. Rare (More).

C. truncata. Common: Sandown, Yarmouth, Shanklin, Niton, Freshwater, Cowes.

C. immanata. Parkhurst (Prout); Cowes, at light (C. Morley); Shanklin (Poole).

C. suffumata. Is on More's list.

C. silaceata. Near Shanklin (Poole); near Yarmouth (Tutt, in Entom., 1889, p. 236); Cowes (Nobbs).

C. prunata. Rare: Newport (Morey); Niton, two on Aug. 3, 1898 (Bloomfield, *teste* Prout).

C. testata. Sandown (Prout); Niton (Bloomfield); St. Boniface Down (Poole).

C. fulvata. Common: Shanklin (Poole); Sandown (Taylor); Bembridge (Wall. Diary).

C. dotata. Shanklin (Poole); Sandown (Taylor); Niton (Bloomfield).

C. associata. Sandown (Prout); Bembridge (Wall. Diary); Shanklin (Poole).

Pelurga comitata. Sandown, common (Prout); Shanklin (Poole).

Eubolia cervinata. Sandown (Taylor); Cowes (Nobbs); Shanklin (Poole).

E. limitata. Shanklin (Poole); Sandown (Taylor).

E. plumbaria. Common: Blackpan and Shanklin Down (Poole); Limpet Run (Prout); Freshwater (Douglas, in Entom., 1904, p. 298).

E. bipunctaria. Common: Blackgang, Yaverland, and Shanklin (Poole); Totland and Freshwater (Douglas, in Entom., 1904, p. 298).

Mesotype virgata. Bembridge Down, one on July 31, 1891; and at Freshwater (Prout); Bembridge (Wall. Diary); Freshwater, July, 1882, and July, 1884 (Banks).

Anaitis plagiata. Common: Herringford, and Shanklin at light (Poole); Sandown (Taylor); Ventnor (Peck); Cowes (Nobbs).

Chesias spartiata. Shanklin (Baker & Poole); Cowes (Nobbs).

Tanagra atrata. Parkhurst (Bevis).

PYRALIDES

(49 species are recorded).

Cledeobia angustalis. Brading Down, common (Prout); Sandown (Taylor).

Aglossa pingualis. Shanklin (Poole); Sandown (Prout).

Pyrallis costalis. Common: Sandown (Prout); Shanklin (Poole).

P. farinalis. Sandown (Prout); Bembridge (Wall. Diary); Shanklin (Poole).

Scoparia ambigualis. Is on More's list, and I have taken one specimen at Shanklin (Poole).

S. cembrae. Sandown (Prout); near Yarmouth (Tutt, in Entom., 1889, p. 236).

S. dubitalis. Brading, &c. (Poole); var. *ingratella*, abundant at Sandown and Freshwater (Vic. Hist.).

The pale form in question should not be called "*ingratella*," being only *ingratella*, Knaggs, *nec* Z.—E. R. BANKES.

S. lineolea. Sandown (Prout).

S. mercurella. Sandown (Prout).

S. crataegella. Is on More's list.

S. resinea. Ventnor (Stainton's Manual).

S. angustea. Sandown, not rare (Prout); Yarmouth (Bankes).

S. pallida. Is on More's list.

Nomophila noctuella. Shanklin (Poole); Yarmouth (Bankes). Sandown, often abundant. This species is well known to be a migrant, and occasionally multiplies prodigiously. I shall never forget two nights in which it thus suddenly appeared at my sugar, the first night in very large numbers, and the next in countless myriads, on most of the patches in layers three or four deep, struggling to get a sip of the sweets (Prout).

Pyrausta aurata. Common: Shanklin (Vic. Hist.); Brading Down and Ventnor (Prout); Bembridge (Wall. Diary).

P. purpuralis. Shanklin (Vic. Hist.).

P. ostrinalis. Abundant: Afton Down (Vic. Hist.); Brading and Bembridge Down (Prout); Freshwater (Hodges).

Herbula cespitalis. Abundant: Brading and Bembridge Downs, &c. (Prout).

Ennychia cingulata. Abundant: Afton Down (Vic. Hist.); Freshwater (Hodges); Bembridge (Wall. Diary).

E. nigrata. One seen near Ventnor, recorded under the name *anguinalis* (South, in Entom., vol. xiii (1880), p. 39).

This is merely recorded as *seen*, which justifies the suggestion that the individual was *cingulata*, and not *nigrata*.—E. R. BANKES.

Endotricha flammealis. Sandown (Prout); Ryde (C. Morley).

Eurrhyncha urticata. Common: Shanklin (Poole); Cowes (Nobbs); Sandown (Prout).

Scopula lutealis. Rare (More).

S. olivalis. Sandown, abundant (Prout).

S. prunalis. Sandown, a perfect pest in July (Prout).

S. ferrugalis. Sandown, abundant in certain seasons only (Prout); Yarmouth (Bankes); Ventnor (Stainton's Manual).

Botys nubilalis. Bembridge, June 8 & 11, 1858 (Wall. Diary); Sandown (Stainton's Manual); apparently now extinct (Prout).

B. pandalis. Rare (More).

B. flavalis. Swarms on Freshwater Down (Vic. Hist.); Brading Down, very common (Prout).

B. ruralis. Sandown (Prout); Yarmouth (Bankes); Brading Down (Poole).

B. fuscalis. Common: Shanklin (Poole); Yarmouth (Bloomfield & Bankes); Bembridge (Wall. Diary).

B. asinalis. Near Freshwater, among *Rubia peregrina* (Vic. Hist.); near Bembridge (Prout); Ventnor (Stainton's Manual).

Ebulea crocealis. Sandown (Prout).

E. verbascalis. Bembridge (Wall. Diary).

E. sambucalis. Sandown (Prout); Shanklin (Poole).

E. stachydalis. Sandown (Prout).

Spilodes sticticalis. Rare: Sandown, twice only (Prout); Bembridge (Wall. Diary).

S. palealis. Near Sandown, very local (Prout); Freshwater, July 20, 1858, and Bembridge, several in 1858 (Wall. Diary); near Shanklin (Poole).

S. verticalis. St. Helens, not common (Vic. Hist.); Sandown (Prout).

Psammotis pulveralis. Isle of Wight, one taken in 1869 by Mr. E. G. Meek (Ent. Mo. Mag., vol. vi, p. 141).

Pionea forficalis. Shanklin (Poole); Sandown (Prout).

Orobena extimalis. Rare (More); Bembridge, June 11, 1858 (Wall. Diary); at wild mustard, Sandown (Rev. A. C. Hervey, in Proc. Hants F. C., 1888).

O. straminalis. Formerly in one restricted spot near Sandown, not seen for many years (Prout); Bembridge (Wall. Diary).

Perinephele lancealis. Rare (More); Parkhurst Forest (Prout); Bembridge, June 8, 1858 (Wall. Diary).

Stenia punctalis. Freshwater (Vic. Hist. & Bankes); Sandown (Prout); Ventnor (Rev. A. C. Hervey, Proc. Hants F. C., 1888).

Cataclysta lemnata. Sandown (Prout).

Paraponyx stratiotata. Sandown, near the Waterworks (Prout & Poole).

Hydrocampa nymphaeata. Sandown, abundant (Prout); Brading Harbour (Poole).

H. stagnata. Sandown (Prout); Brading Harbour (Poole).

PTEROPHORI

(19 species are recorded).

Agdistis bennetii. Abundant in salt marshes, I. of W. (Vic. Hist.); Yarmouth, common (Bankes); Bembridge (Wall. Diary).

Platyptilia bertrami. Ventnor (South, in Tutt's Brit. Lep.).

P. gonodactyla. Sandown (Prout); Ventnor, not common (South, in Tutt's Brit. Lep.).

P. zetterstedtii. Is on More's list.

Amblyptilia acanthodactyla. Ventnor (South, in Tutt's Brit. Lep., under the name of "*cosmodactyla*"); Ryde, August, 1902 (C. Morley); near Sandown (Poole).

Oxyptilus parvidactylus. Isle of Wight, abundant on the coast (W. H. B. Fletcher); Ventnor (South, in Tutt's Brit. Lep.); near Sandown (Poole).

Mimaeseoptilus phaeodactylus. Ventnor (South, in Tutt's Brit. Lep.); I. of W., abundant on the coast (W. H. B. Fletcher).

M. bipunctidactyla. Generally distributed in the Isle of Wight (W. H. B. Fletcher); Ventnor (South); Yarmouth and Freshwater (Tutt); St. Boniface (Poole). The var. *plagiodactyla*, Isle of Wight, abundant (Vic. Hist.).

M. zophodactylus. Ventnor (South, in Tutt's Brit. Lep.).

M. pterodactylus. Brading (Prout); Isle of Wight (W. H. B. Fletcher); Freshwater (Tutt, in Tutt's Brit. Lep.); Ryde (C. Morley); Brading Down and Bordwood (Poole).

Oedematophorus lithodactylus. Sandown (Prout); near Yarmouth (Tutt, in Entom., 1889, p. 236).

Pterophorus monodactylus. Common: Sandown (Prout); Shanklin (Poole).

Leioptilus lienigianus. Ventnor (Stainton's Manual).

L. microdactylus. Sandown (Prout); Bembridge (Wall. Diary); Isle of Wight coast (W. H. B. Fletcher).

L. carphodactylus. On June 6, 1907, I captured two specimens of this newly-discovered British "Plume" near Sandown. One of these was kindly identified for me by Mr. Louis B. Prout, F.E.S., who had previously taken (in 1904 and 1906) three indifferent specimens at the same place. These remained unidentified until my fresh and full-sized specimen confirmed his suspicion as to their being this species. During 1908 it occurred in fair numbers in June, and again at the end of August and beginning of September in smaller numbers (Poole).

Aciptilia spilodactyla. Abundant locally on the chalk downs (Vic. Hist.); Freshwater Down—no trace of it observed on Bembridge Down, where the food-plant likewise grows (Prout).

A. baliodactyla. Isle of Wight, common (South, in Entom., vol. xvi, p. 270); Brading Down (Prout).

A. pentadactyla. Common: Sandown (Prout); Yarmouth (Banks); Shanklin (Poole).

Alucita hexadactyla. Shanklin (Poole); Sandown (Prout).

CRAMBI

(44 species are recorded).

Chilo phragmitellus. Brading Marshes (Prout).

Schoenobius forficellus. Brading (Taylor).

S. gigantellus. One only, Brading, July 23, 1908 (Taylor).

Platytes cerussellus. Most abundant (Vic. Hist.); Culver (Prout).

Crambus falsellus. Very rare (More); Sandown, once only, on a lamp (Prout).

C. pratellus. Found in most grassy places around Ventnor (R. South); Luccombe Common (Poole).

C. dumetellus. Rare (More).

C. pascuellus. In damp places, among long grass (R. South).

C. pinellus. Sandown (Prout).

C. latistrius. Sandown, common in one restricted locality (Prout).

C. perlellus. Sandown (Prout).

C. selasellus. Sandown, local (Prout); Brading (Taylor).

C. tristellus. St. Boniface Down, common (Poole); Sandown, abundant (Prout).

C. inquinatellus. Bembridge Down, not rare (Prout).

C. salinellus. Brading (Taylor).

C. geniculeus. Ryde (C. Morley); Bembridge Down, abundant (Prout); Freshwater Downs, plentiful (Bankes); Shanklin (Poole).

C. culmellus. Ryde (C. Morley); Sandown, abundant (Prout).

C. chrysonuchellus. Pretty common on the downs above Steephill Castle, and other parts (R. South); Freshwater Downs, fairly common (Rev. C. R. Digby).

C. hortuellus. Shanklin and Brading Harbour (Poole).

Anerastia lotella. Bembridge, June 11, 1858 (Wall. Diary).

Ilithyia semirubella. Bembridge Down (Wall. Diary); Ventnor (Rev. A. C. Hervey, in Proc. Hants F.C., 1888).

Myelophila cribrum. Bembridge (Wall. Diary).

Homoeosoma sinuella. Abundant on coast near Sandown (Vic. Hist.); Ventnor, abundant (Rev. C. R. Digby); Limpet Run and the cliff just above it (Prout).

H. nimbella. Shanklin (Vic. Hist.); Sandown (Prout).

H. nebulella. Very rare (More).

H. binaevella. Near Sandown (Prout).

Ephestia elutella. Is on More's list.

Euzophera cinerosella. Near Blackgang (Vic. Hist.).

Heterographis oblitella. One was taken on the south-west coast of the Isle of Wight by Mr. T. J. Blackburn, in 1876 (Ent. Mo. Mag., vol. xv, p. 187), and another between Yarmouth and Freshwater, by Mr. W. Warren, about 1874 (Ent. Mo. Mag., vol. xxiii, p. 233). Not known to have occurred elsewhere in Britain (Bankes).

Phycis fusca. Sandown (Prout).

P. adornatella. Swarms on the chalk downs in the Isle of Wight (Vic. Hist.).

In "Ent. Rec.," vol. xix, p. 206, *P. subornatella* is recorded by Mr. James as swarming on Freshwater Downs, but the form that occurs there is not var. *subornatella*, but the typical one, formerly known as *adornatella*, though now called *dilutella*.—E. R. BANKES.

- Nephopteryx spissicella.** Cowes (Nobbs, *teste* Prout).
N. genistella. Isle of Wight, larvae may sometimes be taken in abundance (Vic. Hist.).
Pempelia palumbella. Is on More's list.
Rhodophaea consociella. Yarmouth, larvae common on oak (Banks).
R. advenella. Near Sandown, once only (Prout); near Yarmouth (Tutt, in Entom., 1889, p. 236).
R. marmorea. Larvae abundant on stunted blackthorn on the coast (Vic. Hist.); Culver (Prout).
R. suavella. Freshwater (James, in Ent. Rec., vol. xix, p. 205).
R. zelleri, Rag. (= *tumidella*, *Zk.*, South). Is on More's list under the latter name.
R. tumidana, S.V. (= *verrucella*, *Hb.* = *rubrotibiella*, *F.R.*). Yarmouth, taken rarely by Mr. H. Bartlett in 1873, and recorded by myself in "Ent. Mo. Mag.," ser. 2, vol. xv, p. 255, as *verrucella*, *Hb.* (*vide* Barrett). Barrett's own specimens, upon which his differentiation of *verrucella* from *rubrotibiella* in "Ent. Mo. Mag.," ser. 2, vol. xiv, pp. 164-6, was founded, belie, in certain crucial details, his descriptions of them, nor can I find any reliable distinctions between them. In my opinion, *verrucella* and *rubrotibiella* are conspecific, and I am writing, for the "Ent. Mo. Mag.," some notes in correction of those just referred to. Ragonot's synonymy (Ent. Mo. Mag., vol. xxii, p. 57), as briefly given above, consequently holds good, and, as shown by him, the generic name *Rhodophaea* should be discarded, and replaced, in the case of *consociella*, *zelleri*, and *tumidana*, of the above species, by *Acrobasis* (E. R. Banks).
Oncocera ahenella. Abundant on Freshwater Down—variable in size and colour (Vic. Hist.); Bembridge (Wall. Diary).
Galleria mellonella. Near Shanklin (Poole).
Aphomia sociella. Sandown (Prout); near Shanklin (Poole).
Melissoblaptes anellus. On sand-hills, St. Helens (Vic. Hist.).

TORTRICES

(122 species are recorded).

- Tortrix podana.** Sandown (Prout); Shanklin (Poole).
T. xylostearia. Sandown (Prout).
T. sorbiana. Is on More's list.
T. rosana. Sandown (Prout); Yarmouth (Banks).
T. ribeana. Luccombe, on the shore (Poole).
T. corylana. Sandown (Prout); Bordwood (Poole).
T. unifasciana. Sandown (Prout).
T. costana. This species and the var. *laticornis* occur in the Yarmouth salt marshes (Vic. Hist.); Sandown (Prout).

T. viburnana. Is on More's list.

T. viridana. Sandown (Prout); Bordwood (Poole); Yarmouth, common (Banks).

T. forsterana. Sandown (Prout); Shanklin (Poole).

Dichelia grotiana. Bordwood (Prout).

Oenectra pilleriana. Near Ventnor, also in salt marshes (Vic. Hist.).

Extremely local, but more or less common in its two known localities. The salt marshes alluded to are those near Yarmouth.—E. R. BANKES.

Leptogramma literana. Bordwood (Prout); Bembridge (Wall. Diary).

Peronea sponsana. Sandown (Prout).

P. schalleriana. Sandown (Prout).

P. comparana. Sandown (Prout).

P. variegana. Sandown (Prout).

P. hastiana. Mr. W. H. B. Fletcher has taken larvae in some numbers in the Isle of Wight (Vic. Hist.); Sandown (Prout).

P. ferrugana. Parkhurst (Prout); Yarmouth (Banks).

P. logiana. Sandown (Prout).

P. aspersana. Common on the Chalk (Vic. Hist.); Freshwater, &c. (Banks).

Rhacodia caudana. Sandown (Prout).

Teras contaminana. Sandown (Prout); Yarmouth (Banks).

Dictyopteryx loeflingiana. Sandown (Prout); Yarmouth (Banks).

D. holmiana. Sandown (Prout).

D. bergmanniana. Sandown (Prout); Yarmouth (Banks).

D. forskaleana. Sandown (Prout).

Argyrotoxa conwayana. Sandown (Prout).

Ptycholoma lecheana. Yarmouth, not uncommon (Banks).

Ditula semifasciana. Sandown (Prout).

Penthina ochroleucana. Yarmouth (Banks).

P. variegana. Bordwood (Poole).

P. gentiana. Isle of Wight (Vic. Hist.).

P. sellana. Not scarce on the downs and at Steephill Cove (South, in Entom., vol. xiii (1880), p. 40).

P. fuligana. Is on More's list.

Two species, attached to *Ajuga reptans* and *Stachys* respectively, were formerly confused together under the name *fuligana*, and it is impossible to say to which More's entry refers. Both occur very locally in the neighbouring county of Dorset, and I took a specimen of the latter, which is the true *fuligana*, Hb. (= *carbonana*, Brt., nec. Dbl.), at Brockenhurst in 1908.—E. R. BANKES.

Hedya ocellana. Yarmouth (Banks).

Spilonota roborana. Sandown (Prout).

Aspis udmanniana. Sandown (Prout); Ventnor (South, in Entom., vol. xiii (1880), p. 40).

Sericoris littoralis. Freshwater, common amongst sea-pink (Banks); Ventnor (South, in Entom., vol. xiii (1880), p. 40).

- S. rivulana.** Is on More's list.
S. urticana. Sandown (Prout).
S. lacunana. Sandown (Prout).
Euchromia purpurana. Ventnor, not uncommon in rough fields (South, in Entom., vol. xiii (1880), p. 40).
Orthotaenia antiquana. Freshwater (Vic. Hist.).
O. striana. Sandown (Prout).
O. ericetana. Shanklin (Stainton's Manual); appears to be scarce (Vic. Hist.).
Eriopsela fractifasciana. Brading Down (Prout); Freshwater (Bankes).
E. quadrana. Isle of Wight (Vic. Hist.).
Phtheochroa rugosana. Is on More's list.
Sciaphila conspersana. The pale form, sometimes entirely without markings, is abundant at Freshwater and Sandown, and may be bred freely from larvae feeding on spikes of *Plantago lanceolata* (Vic. Hist.).
S. subjectana. Sandown (Prout); Freshwater (Bankes).
S. chrysanthæana. Sandown (Prout).
Sphaleroptera ictericana. Freshwater and Yarmouth (Bankes).
Bactra lanceolana. Yarmouth, abundant (Bankes); Sandown, abundant (Prout).
B. furfurana. Salt marshes near Yarmouth (Vic. Hist.).
Phoxopteryx comptana. Swarms on the Chalk in the Isle of Wight (Vic. Hist.); Freshwater, abundant (Bankes).
Grapholitha nigromaculana. Isle of Wight, among *Senecio erucaefolius*, in the flower-heads of which the larva feeds (Vic. Hist.).
G. gemmiferana. Coast of the Isle of Wight, among *Lathyrus sylvestris* (Vic. Hist.).
 Not found elsewhere in the British Isles.—E. R. BANKES.
Phloeodes immundana. Freshwater (Bankes).
Hypermezia cruciana. Abundant (Vic. Hist.).
Batodes angustiorana. Parkhurst (Prout).
Paedisca corticana. Sandown (Prout).
Ephippiphora cirsiana. Among *Centaurea scabiosa* (Vic. Hist.).
E. pflugiana. Ventnor, very scarce (South, in Entom., vol. xiii (1880), p. 40).
E. brunnichiana. Freshwater and Sandown among *Tussilago farfara* (Vic. Hist.); Yarmouth (Bankes).
E. inopiana. Abundant near Freshwater (Vic. Hist.).
E. foenella. Shanklin (Poole).
E. costipunctana (trigeminana). Sandown (Prout); abundant near Freshwater (Vic. Hist.).
E. tetragonana. Freshwater (Bankes).
E. populana. Ventnor, bred from *Eupatorium cannabinum* (South, in Entom., vol. xiii (1880), p. 40).
Semasia spiniana. Near Freshwater (Vic. Hist.).

S. rufillana. Freshwater and Yarmouth (Banks).

S. woerberiana. Elm Grove, Newport (C. Morley).

Retinia pinivorana. Parkhurst (Prout).

Carpocapsa pomonella. Shanklin (Poole).

Endopisa nigricana. Shanklin and Ventnor (Vic. Hist.).

Stigmonota perlepidana. Freshwater (Vic. Hist.).

S. compositella. Isle of Wight, among clover (Vic. Hist.); Isle of Wight, common (South, in Entom., vol. xvi, p. 270); Freshwater and Yarmouth (Banks).

Dichrorampha politana. Near Sandown (Prout); Isle of Wight, abundant (South, in Entom., vol. xvi, p. 270).

D. sequana. Ventnor, a few (South, in Entom., vol. xiii (1880), p. 40).

D. petiverella. Everywhere common in the Isle of Wight, among yarrow (Vic. Hist.); Culver (Prout).

D. plumbana. Everywhere common in the Isle of Wight, among yarrow (Vic. Hist.).

D. saturnana. Ventnor, plentiful but local (South, in Entom., vol. xiii (1880), p. 40).

D. plumbagana. Everywhere common in the Isle of Wight, among yarrow (Vic. Hist.).

D. acuminatana. A few along the upper cliffs, Ventnor (South, in Entom., vol. xiii (1880), p. 40).

D. simpliciana. Shanklin, amongst mugwort (South, in Entom., vol. xiii (1880), p. 40).

D. senectana. This scarce and extremely local species has been taken in the Isle of Wight (Vic. Hist.); common in several places along the foot of the downs at Ventnor (South, in Entom., vol. xiii (1880), p. 40).

D. consortana. Freshwater (Banks); Ventnor (South, in Entom., vol. xiii (1880), p. 40).

Pyrodes rheediella. Ventnor, common early in June, flying round hawthorn blossom in the sunshine (South, in Entom., vol. xiii (1880), p. 41).

Catoptria ulicetana. Sandown (Prout); Blackpan Common—swarming round furze bushes in May (Poole).

C. cana. Isle of Wight, common (South, in Entom., vol. xvi, p. 270); Freshwater (Banks).

C. fulvana. Among *Centaurea scabiosa* (Vic. Hist.); Freshwater (Banks).

C. scopoliana. Freshwater, not uncommon (Vic. Hist.); the var. *parvulana* has been taken commonly at Freshwater by Mr. E. R. Banks by sweeping flower-heads of *Serratula tinctoria* (Vic. Hist.).

C. tripoliana. Abundant in the Yarmouth marshes among *Aster tripolium*; a very variable species (Vic. Hist.).

C. expallidana. One at Ventnor (South, in Entom., vol. xiii (1880), p. 41).

C. pupillana. St. Catherine's Down, among *Artemisia absinthium* (Vic. Hist.); Isle of Wight, sometimes very common (South).

Choreutes bjerkanndrella. Is on More's list.

Symaethis oxyacanthella. Sandown (Prout).

Eupoecilia atricapitana. Yarmouth (Bankes); Ventnor, not often met with (South, in Entom., vol. xiii (1880), p. 41).

E. hybridella. Landslip (Vic. Hist.); near Sandown (Prout).

E. angustana. Near Sandown (Prout).

E. affinitana. In the salt marshes (Vic. Hist.); Yarmouth, common (Bankes).

E. vectisana. Common in the salt marshes of the Isle of Wight among *Triglochin maritimum*, on which the larvae feed (Vic. Hist.); Bembridge (Wall. Diary); Yarmouth, abundant and very variable (Bankes); near Ryde (Stainton's Manual).

E. notulana. Marshes (Rev. A. C. Hervey, Proc. Hants F.C., 1889).

E. flaviciliana. Recorded for the Isle of Wight in Wilkinson's "British Tortrices," and Meyrick's "Handbook."

E. roseana. Isle of Wight, generally abundant amongst teasle (South); Yarmouth (Bankes).

E. implicitana. The species recorded from Ryde as *subroseana* by Curtis in "Pro. Ent. Soc. Lond.," n. s., vol. iii, pp. 43-4, is stated by Lord Walsingham, "Ent. Mo. Mag.," ser. 2, vol. iv, pp. 225-6, to be *implicitana*, Wk. (Bankes).

E. ciliella. Among cowslips, Freshwater Down (Vic. Hist.); common on Freshwater Down (Bankes).

Xanthosetia zoegana. Common on the Chalk (Vic. Hist.).

X. hamana. Common on the Chalk (Vic. Hist.); Sandown (Prout); Luccombe (Poole).

Chrosis aleella. Swarms on the Chalk (Vic. Hist.); Sandown (Prout); Freshwater, abundant (Bankes).

Argyrolepia subbaumanniana. Limpet Run, near Sandown (Prout); Freshwater Down, not uncommon (Bankes).

A. zephyrana. Abundant on the Isle of Wight coast. Mr. Fletcher has a series of very large specimens, bred, from Afton Down (Vic. Hist.).

A. cnicana. Is on More's list.

A. badiana. Ventnor, common among burdock (South, in Entom., vol. xiii (1880), p. 41).

Conchylis dipoltella. Is on More's list.

C. francillana. Abundant (Vic. Hist.); Limpet Run (Prout); Freshwater (Hodges & Bankes).

C. dilucidana. Isle of Wight (Stainton's Manual); Ventnor, not scarce (South, in Entom., vol. xiii (1880), p. 41).

C. smeathmanniana. Freshwater, one (Bankes); Bembridge (Wall. Diary).

C. straminea. On the coast near Sandown (Vic. Hist.).

Aphelia osseana. Bembridge Down (Prout).

TINEAE

(161 species are recorded).

Diurnea fagella. Sandown, &c. (Prout); swarms at Greatwoods, near Shanklin (Poole).

Talaeporia pseudo-bombycella. Sandown (Prout); woods, &c. round Shanklin, also at Newchurch (W. H. B. Fletcher).

Luffia ferchaultella. Sandown, generally distributed in the woods (Prout).

Epichnopteryx pulla. Brooke (Kaye, in Tutt's Brit. Lep.); Blackpan Common (Poole).

Fumea casta (intermediella). Sandown (Prout); St. Helens (Tutt's Brit. Lep.).

Psychoides verhuellella. Is on More's list.

Diplodoma marginepunctella. One larva in Rowdown Copse, near Sandown, see Tutt's "Brit. Lep.," vol. ii, p. 154 (Prout).

Xysmatodoma melanella. Near Sandown (Prout).

Ochsenheimeria birdella. Sandown (Prout); Bonchurch (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

Blabophanes imella. Is on More's list.

Tinea albipunctella. Is on More's list.

T. pellionella. Sandown (Prout).

T. argentimaculella. Freshwater, uncommon (Bankes).

T. semifulvella. Landslip (E. Smith, in Ent. Weekly Intel., vol. ii, p. 148).

Incurvaria muscalella. Isle of Wight (Vic. Hist.).

Nemophora swammerdammella. Isle of Wight (Vic. Hist.).

N. schwarziella. Greatwoods, near Shanklin (Poole); Freshwater, common (Bankes).

N. metaxella. Is on More's list.

Adela croesella. Carisbrooke (Vic. Hist.).

A. viridella. Cowes (Wall. Diary); swarms in Bordwood round the hazels (Poole).

Nematois cupriacellus. Is on More's list.

N. minimellus. Freshwater, not uncommon locally (Bankes).

Swammerdammia pyrella. Sandown (Prout).

Hyponomeuta plumbellus. Near Brading Down (Prout).

H. padellus. Sandown (Prout); Shanklin (Poole).

H. cagnagellus. Sandown and district (Prout).

Prays curtisellus. Sandown (Prout).

Plutella cruciferarum. Sandown (Prout).

Cerostoma radiatella. Sandown (Prout); Yarmouth (Bankes).

C. costella. Landslip (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

C. sylvella. Landslip (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68); Youngwood Copse (Prout).

Harpiteryx nemorella. Is on More's list.

H. xylostella. Sandown (Prout); Ryde (C. Morley).

Phibalocera quercana. Sandown (Prout).

Depressaria costosa. Sandown (Prout); Yarmouth, common (Banks); St. Boniface and Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. flavella. Freshwater (Stainton's Manual); generally common (Prout); Freshwater, larvae not uncommon (Banks); Ventnor (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. bipunctosa. Recorded from Freshwater in Stainton's Manual, and I have bred it sparingly from there. Certainly distinct from all its allies, though some authors, from lack of acquaintance with it, have erroneously sunk it as a variety of *D. flavella* (Banks).

D. pallorella. Sandown, scarce (Prout).

D. umbellana. Sandown (Prout); St. Boniface (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. nanatella. Bembridge Down (Vic. Hist.); Shanklin (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. arenella. Shanklin (Poole); Sandown (Prout); Yarmouth (Banks); Ventnor (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. propinquella. Sandown (Prout); Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. subpropinquella. Sandown (Prout); Ventnor and Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. alstroemeriana. Sandown (Prout); Ventnor (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. purpurea. Sandown (Prout); Niton, St. Boniface Down, Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. capreolella. Ventnor (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. ocellana. Sandown (Prout).

D. yeatiana. Sandown (Prout); Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. applana. Freshwater (W. H. B. Fletcher); Sandown, common (Prout).

D. ciliella. Niton (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. rotundella. Freshwater and St. Catherine's Downs (Vic. Hist.); Sandown (Prout).

D. albipunctella. Niton (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. discipunctella. Sandown (Prout).

D. pulcherrimella. Sandown (Prout—also Vic. Hist.).

D. douglasella. Freshwater (Vic. Hist.); Sandown (Prout).

D. weirella. Sandown (Prout).

D. chaerophylli. Niton (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. nervosa. Near Yarmouth, abundant (Vic. Hist.); between Sandown and Shanklin, abundant, the melanic aberration very

sparingly (Prout); Niton and Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. badiella. Abundant, Freshwater Down (Vic. Hist.); Yarmouth (Banks); Sandown, common (Prout); Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

D. heracleana. Isle of Wight, common (Vic. Hist.); Sandown, abundant (Prout); Niton and Appuldurcombe (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

Gelechia vilella. Isle of Wight, common (Stainton's Manual).

G. malvella. Yarmouth, locally common (Vic. Hist.); larvae plentiful at Yarmouth on *Althaea officinalis* (Banks).

G. mulinella. Sandown (Prout).

Bryotropha terrella. Sandown (Prout).

B. desertella. Abundant on sand-hills, St. Helens (Vic. Hist.).

B. senectella. Abundant on sand-hills, St. Helens (Vic. Hist.).

B. mundella. St. Helens (W. H. B. Fletcher).

B. domestica. Sandown (Prout).

Lita costella. Freshwater (Vic. Hist.); Sandown (Prout).

L. maculea. Sandown (Prout).

L. marmorea. St. Helens (W. H. B. Fletcher).

L. obsoletella. St. Helens and Sandown (Vic. Hist.); Yarmouth (Banks).

L. atriplicella. Freshwater and Yarmouth, abundant (Banks).

L. instabilella. Yarmouth (Banks).

L. plantaginella. Common near Ventnor and Freshwater among *Plantago coronopus*, and near Yarmouth among *P. maritima* (Vic. Hist.).

L. salicorniae. Isle of Wight (Vic. Hist.); St. Helens (W. H. B. Fletcher); Yarmouth salt marshes, not uncommon locally (Banks).

Teleia luculella. Yarmouth (Banks).

T. sequax. Freshwater (Vic. Hist.).

Argyritis pictella. Very abundant on the coast near St. Helens (Vic. Hist.).

Nannodia stipella, var. **naeviferella.** Yarmouth (Vic. Hist.).

Apodia bifractella. Coast near Ventnor (Vic. Hist.); near Sandown (Prout).

Ptocheuusa inopella. Abundant in the Isle of Wight among *Inula dysenterica* (Vic. Hist.); Sandown (Prout).

P. littorella. Near Ventnor: originally found by S. Stevens, recently rediscovered there by Lord Walsingham (Vic. Hist.); common very locally (Banks).

Ergatis brizella. Not uncommon amongst *Statice limonium* at Yarmouth (Banks).

Lamprotes atrella. Is on More's list.

Anacamptis ligulella. Near Luccombe Chine, a very local species (Vic. Hist.).

A. taeniolella. Abundant on the chalk downs (Vic. Hist.).

A. anthyllidella. Limpet Run (Prout); Freshwater (Tutt, *teste* Banks).

Tachyptilia populella. Sandown (Prout).

Parasia metzneriella. Is on More's list.

P. carlinella. On the Chalk (Vic. Hist.).

Chelaria hubnerella. Centurion's Copse (Prout).

Harpella geoffrella. Near Sandown (Taylor); Yarmouth (Banks); Brading Down (Poole).

Dasycera sulphurella. Sandown (Taylor); Freshwater (Banks); Bordwood (Poole).

Oecophora lambdella. Sandown (Prout).

Oe. unitella. Yarmouth, not uncommon (Digby, *teste* Banks).

Oe. pseudospretella. Sandown (Prout).

Oecogenia quadripunctata. Sandown (Prout).

Endrosis fenestrella. Yarmouth (Banks).

Acrolepia granitella. Sandown (Prout).

Glyphipteryx fuscoviridella. Shanklin (Vic. Hist.).

G. schoenicolella. Mr. Fletcher has a specimen which he took in the Yarmouth marshes. The capture is noteworthy, as the only known food-plant of the species, *Schoenus nigricans*, does not seem to have been recorded from the Island (Vic. Hist.).

G. forsterella. Yarmouth salt-marshes (Vic. Hist.).

Perittia obscurepunctella. Freshwater (Vic. Hist.).

Argyresthia goedartella. Sandown (Prout).

Gracillaria stigmatella. Isle of Wight (Vic. Hist.).

G. semifascia. Isle of Wight (Vic. Hist.); Landslip (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

G. tringipennella. Freshwater (Banks).

G. syringella. Sandown (Prout).

G. omisella. Freshwater (Vic. Hist.).

G. phasianipennella. Isle of Wight (Stainton's Manual); Landslip (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

G. ononidis. Freshwater (Vic. Hist.).

Goniodoma limoniella. Yarmouth salt-marshes (Vic. Hist.). Plentiful at Yarmouth. Recorded from there in Stainton's Manual, and elsewhere, under the name *auroguttella*, but the true *auroguttella* has never been found in Britain (Banks).

Coleophora fabriciella. Is on More's list.

C. deauratella. Near Ventnor (Vic. Hist.).

C. frischella (melilotella). Near Bembridge and Ventnor (Vic. Hist.).

C. wockeella. On chalk downs (Vic. Hist.); Freshwater, locally common (Banks).

C. binotapennella. Yarmouth salt-marshes, common among *Salicornia herbacea* (Vic. Hist.).

C. currucipennella. Hampstead (Vic. Hist.).

C. discordella. Freshwater (Bankes); abundant in the Isle of Wight (Vic. Hist.).

C. conyzae. Sandown (Vic. Hist.).

C. therinella. Near Ventnor (Vic. Hist.).

C. troglodytella. Near Ventnor (Vic. Hist.).

C. caespititiella. Isle of Wight, among *Juncus articulatus* (Vic. Hist.); Yarmouth, common (Bankes).

C. glaucicolella. Abundant near Ventnor (Vic. Hist.); Yarmouth, abundant (Bankes).

C. obtusella. Yarmouth Marshes, among *Juncus maritimus* (Vic. Hist.); Yarmouth, common (Bankes).

C. alticolella. Yarmouth, not uncommon locally (Bankes).

C. laripennella. Yarmouth (Vic. Hist.).

C. flavaginella. Yarmouth, uncommon (Bankes).

C. maeniacella. Yarmouth, larvae locally plentiful on both *Atriplex portulacoides* and *Suaeda maritima* (Bankes).

C. salinella. Yarmouth, rather uncommon (Bankes).

C. argentula. Yarmouth (Bankes).

C. nigricella. Freshwater, larvae locally common on hawthorn (Vic. Hist.).

C. fuscadinella. Freshwater, larvae common on elm (Vic. Hist.).

C. adjunctella. Yarmouth salt-marshes, not uncommon among *Juncus gerardi* (Vic. Hist.).

Chauliodus dancellus. Near Sandown and Freshwater (Vic. Hist.); occasionally abundant very locally, but fond of changing its locality (Bankes).

C. insecurellus. Near Sandown, among *Thesium humifusum* (Vic. Hist.); Freshwater, apparently scarce (Bankes).

C. chaerophyllellus. Near Ventnor, abundant (Vic. Hist.).

Laverna miscella. Freshwater Down, abundant (Vic. Hist.).

L. epilobiella. Isle of Wight (Vic. Hist.); Yarmouth, not uncommon (Bankes); near Ventnor (Blackburn, in Ent. Mo. Mag., vol. ii, p. 68).

Chrysoclysta aurifrontella. One at Shanklin, at rest on a wall (Poole).

Asychna profugella. Isle of Wight (Meyrick's Handbook).

A. aeratella. Redcliff, Sandown, June 29, 1907 (C. Morley).

Elachista albifrontella. Yarmouth (Bankes).

E. stabilella. Freshwater (Bankes).

E. bedellella. Abundant on the Chalk (Vic. Hist.); Freshwater (Bankes).

E. obscurella. Freshwater (Vic. Hist.).

E. megerlella. Freshwater (Vic. Hist.).

E. scirpi. Yarmouth salt-marshes (Vic. Hist.); locally common at Yarmouth (Bankes).

E. biatomella. Freshwater and Bembridge Down (Vic. Hist.).

E. rufocinerea. Yarmouth (Bankes).

- E. argentella.** Limpet Run, near Sandown (Poole).
Lithocolletis blancardella. Isle of Wight (Vic. Hist.).
L. concomitella. Isle of Wight (Vic. Hist.).
Lyonetia clercella. Isle of Wight (Vic. Hist.).
Cemiostoma lathyrioliella. Isle of Wight (Vic. Hist.).
Bucculatrix maritima. Yarmouth salt-marshes (Vic. Hist.); common at Yarmouth (Bankes).
B. cristatella. Near Sandown, and Freshwater (Vic. Hist.).
Nepticula ignobilella. Isle of Wight (Stainton's Nat. Hist. Tin.).
N. acetosae. Found by Mr. Wing between Niton and Blackgang (Vic. Hist.).
N. marginicolella. Isle of Wight (Stainton's Nat. Hist. Tin.).

NOTE.—A few new records having turned up since the first part of this paper was printed, the total of the species on the list, as there given, is not quite correct. It should be 972 instead of 964.—H. F. POOLE.

APPENDIX.

The following species have been recorded for the Isle of Wight, but most of the records are of too doubtful a character to warrant their inclusion in the foregoing list at present :—

Lycaena semiargus. It has been *reported* as taken lately at Ventnor, Isle of Wight (Coleman's Butterflies, 1863).—The italics are the author's.

Hesperia comma. Is given by the late Mr. H. Goss, in the "Victoria History," as occurring on the Chalk in the Isle of Wight. I have never seen a specimen, nor can I find it in the many collections of local insects I have examined, or in the numerous lists I have received.

Zygaena lonicerae. Is recorded for Sandown in the "Proc. Hants F. C." for 1887, by the Rev. A. C. Hervey, who tells me that he has also taken it in the Undercliff. As no other collector seems to have met with the species here, and as *trifolii* is common at each of these localities, I have included it amongst the doubtful records for the present.

Caradrina superstes. This was erroneously recorded as taken at Freshwater and Sandown in the "Ent. Rec.," vol. iv, p. 337 (1893); but it was shown in the "Ent. Rec.," vol. vi, p. 203 (1895), that these records belonged to *C. ambigua*.

Thalpochares parva. Has been recorded from Freshwater (Vic. Hist.). Mr. E. R. Bankes tells me that the specimen recorded from Freshwater in the "Ent. Mo. Mag.," vol. xvii, p. 135, upon which the "Vic. Hist." entry was probably based, was certainly not British.

Acidalia ochrata. Is given as an I. of W. species by Barrett (Brit. Lep., vol. viii, p. 9); and also by South (Moths of the Brit. Is., series 2, p. 132) on Barrett's authority.

Fidonia carbonaria. Is recorded in the "Proc. Hants F. C." for 1887. The Rev. A. C. Hervey—who makes the record—tells me that he captured one specimen only, on Afton Down, thirty or more years ago, and remembers his surprise at finding it in the Isle of Wight. The identification he is certain is correct, as he was well acquainted with Scotch examples. Unfortunately, his collection was sold at Stevens' Rooms some fifteen years ago. I can only suggest that the specimen may have been an escape.

Crambus contaminellus. Is given by More—probably a mistake, Mr. Prout suggests, for *C. inquinatellus*. Mr. Bankes, however, writes: "If More's insect occurred in the salt marshes, it was doubtless *C. salinellus*, which was only separated from the true *C. contaminellus* in 1887, and has been found in Hants (Hayling I.) by Mr. W. H. B. Fletcher."

Ceratophora inornatella. Is on More's list, but is most probably in error for *C. rufescens*. In any case it awaits confirmation.

INTRODUCTIONS.

Mr. Masters has liberated *Eugonia autumnaria* in some numbers at Cowes; and I have planted out a quantity of young larvae of *Trochilium apiforme* on poplars in Shanklin this season (1908).

BOOKS ON BRITISH LEPIDOPTERA.

The following works can be recommended:—

Newman's "Illustrated History of British Butterflies and Moths"—useful on account of the good recognizable woodcuts, though the text is out of date. South's work on the Butterflies and Moths of the British Isles (three volumes issued as yet)—with coloured plates. Meyrick's "Handbook of British Lepidoptera"—contains brief descriptions, &c., and includes most of the species, though opinions are divided as to its utility. Stainton's "Manual of British Butterflies & Moths," though out of date, is still useful.

Two higher-priced and recent works are Barrett's "Lepidoptera of the British Islands," 11 vols., 1892—1907, excluding Tineina; and Tutt's "Natural History of the British Lepidoptera," now in course of publication—7 vols. of this great work are ready.

Stainton's "Natural History of the Tineina" (13 vols., 1855-73) is still a classic in that group.

DIPTERA.

BY THE EDITOR.

I WAS not able to hear of any entomologist who would undertake to write a list of our local Diptera, or two-winged Flies. It has therefore fallen upon me to collect whatever information I could on the subject from various sources, with the result that I am able to record about 280 species. Some of these are of my own collecting; other names, with data as to capture, were sent me by Messrs. C. Morley, E. A. Butler, F. C. Adams, H. St. J. K. Donisthorpe, and H. F. Poole; whilst Mr. J. E. Collin kindly sent me a list of species taken by Mr. Verrall in the Island—mainly at Freshwater and Bonchurch.

I am not aware that any list of I. of W. Diptera has ever been published, and I have not had time to search the entomological magazines to see if they contain any records.

A good list of the Flies of Hampshire, by Mr. F. C. Adams, is published in the Victoria History of the county, but Mr. Adams informs me that none of these came from the Island, and that the great majority of them were collected in the New Forest. A very large proportion of these would doubtless occur in the I. of W.

As regards the names of the Flies collected by myself, I am greatly indebted to the Rev. W. J. Wingate who has named the majority of my captures, and also to the Rev. E. N. Bloomfield who has rendered me valuable service in the same way. Mr. Lyle of Brockenhurst, too, gave me the names of several of the gall-forming Flies from some vegetable galls in my collection.

The arrangement adopted in the following list is that of Mr. G. H. Verrall's "List of British Diptera," 2nd edition, 1901.

In reference to the first family treated of by Mr. Verrall in his list—Pulicidae, containing the Fleas, I need only say that *Pulex irritans* is as frequent in the Island as elsewhere; and, no doubt, the various species usually attached to certain of our domestic and wild animals and birds occur here also, but no attempt has been made to identify any of these.

To those who are not entomologists, I may say that Fleas are sometimes placed in an order by themselves—Aphaniptera; but others regard them as aberrant, apterous Diptera.

Dr. Sharp states that the species of Diptera already collected number about 40,000, and he suggests that this may not be more than a tithe of those which exist throughout the World. In Britain we have more than 2,500 species.

The following are some of the principal books and papers relating to this order: "British Flies (*Platypezidae*, *Pipunculidae*, & *Syrphidae*)," by G. H. Verrall, 1901, Gurney & Jackson. "British Flies (*Stratiomyidae* to *Cyrtidae*)," by G. H. Verrall, 1908, Gurney and Jackson. "A List of British Diptera," by G. H. Verrall, 2nd edition, 1901. Mr. Verrall has also published a paper on British *Tipulidae*, "Ent. Mo. Mag.," 1886—1888; and on British *Dolichopodidae*, "Ent. Mo. Mag.," 1904—1905, both obtainable from the author. Durham Diptera (with analytical tables), by Rev. W. J. Wingate, with seven plates, price 9s., Williams & Norgate. "Manual of North American Diptera," by S. W. Williston, 3rd edition, 1908, Hathaway—obtainable from Wesley & Sons. The chapter on Diptera in the "Cambridge Natural History," vol. vi.

CECIDOMYIDAE

Asphondylia pimpinellae, *F. Lw.* Galls on the flowers of wild carrot, Pan Down, &c. (Morey).

Cecidomyia saliciperda, *Duf.* Galls on willows, common (Morey).

C. ulmariae, *Bremi.* Galls on leaves of meadow-sweet (Morey).

C. urticae, *Perris.* Galls on the stinging-nettle, frequent (Morey).

Hormomyia annulipes, *Hart.* (= *piligera*, *Lw.*). Galls on leaves of beech, Carisbrooke, &c. (Morey).

H. capreae, *Winn.* Galls on willows (Morey).

MYCETOPHILIDAE

Sciara Thomae, *L.* Specimens seen at Calbourne, also on flowers of *Cicuta virosa* at Shanklin, and in garden at Newport, in June, 1907 (Morley).

Glaphyroptera fascipennis, *Mg.* I. of W. (Verrall).

Sciophila marginata, *Mg.* I. of W. (Verrall); in house at Ryde, March (Morley).

S. ornata, *Mg.* On window in house, Newport, in February (Morey).

Macrocera fasciata, *Mg.* I. of W. (Verrall).

- M. centralis**, *Mg.* I. of W. (Verrall).
M. stigma, *Curt.* I. of W. (Verrall).
M. phalerata, *Mg.* I. of W. (Verrall).
Plesiastina annulata, *Mg.* I. of W. (Verrall).

BIBIONIDAE

Scatopse notata, *L.* In garden, Shanklin, October; also at Ventnor (Morey).

S. brevicornis, *Mg.* I. of W. (Verrall).

Dilophus febrilis, *L.* Ryde, in May (Morley); swept from grass in garden, also in field, at Newport, in May (Morey).

D. femoratus, *Mg.* Swept from herbage, Newport, in May (Morey).

Bibio Marci, *L.* In garden, Newport, in April—a slow-flying insect (Morey).

B. varipes, *Mg.* Swept from herbage, Marvel Copse, May (Morey).

SIMULIDAE

Simulium reptans, *L.* On window in house, Newport, Nov. (Morey).

CHIRONOMIDAE

Chironomus plumosus, *L.* On water, at Binstead, in March (Morley).

Camptocladius aterrimus, *Mg.* In house, Newport, Feb. (Morey).

Metriocnemus fuscipes, *Mg.* On window in house, Newport, April (Morey).

Tanypus nebulosus, *Mg.* On ceiling of outhouse, Newport, April (Morey).

T. culiciformis, *L.* Same as the last.

T. nervosus, *Mg.* (?) Same as the last.

Ceratopogon vexans, *Ztt.* I. of W. (Verrall).

C. femoratus, *Mg.* Shalfleet, in June (Morley).

CULICIDAE

Culex pipiens, *L.* Ryde, in Oct. (Morley); in outhouse, Newport, Feb. (Morey).

PTYCHOPTERIDAE

Ptychoptera contaminata, *L.* At margin of pond, Heytesbury Farm, in May; and swept from herbage in Parkhurst Forest in August (Morey).

LIMNOBIDAE

- Limnobia nubeculosa**, *Mg.* I. of W. (Verrall).
L. flavipes, *F.* I. of W. (Verrall).
L. tripunctata, *F.* I. of W. (Verrall).
Dicranomyia lutea, *Mg.* I. of W. (Verrall).
D. chorea, *Mg.* I. of W. (Verrall); on ceiling of outhouse, Newport, April; and in house, Newport, in May (Morey).
D. dumetorum, *Mg.* I. of W. (Verrall).
Empeda flava, *Schum.* I. of W. (Verrall).
E. nubila, *Schum.* I. of W. (Verrall).
Rhypholophus nodulosus, *Mcq.* I. of W. (Verrall).
Erioptera taenionota, *Mg.* I. of W. (Verrall).
E. maculata, I. of W. (Verrall).
Symplecta stictica, *Mg.* I. of W. (Verrall).
Limnophila dispar, *Mg.* I. of W. (Verrall).
L. ochracea, *Mg.* I. of W. (Verrall).
L. sepium, *Verr.* I. of W. (Verrall).
Adelphomyia senilis, *Hal.* I. of W. (Verrall).
Trichocera annulata, *Mg.* In house, Newport, Feb. and March (Morey).
T. regelationis, *L.* On ceiling of outhouse, Newport, April (Morey).

TIPULIDAE

- Pachyrrhina histrio**, *F.* I. of W. (Verrall).
P. quadrifaria, *Mg.* I. of W. (Verrall).
Tipula scripta, *Mg.* I. of W. (Verrall).
T. oleracea, *L.* I. of W. (Verrall); Ventnor, Oct. (Morey).
T. paludosa, *Mg.* Swept in Rookley Wilderness, June (Morley); on window in house, Newport, Aug. (Morey).
T. ochracea, *Mg.* I. of W. (Verrall); flying in garden, Newport, May (Morey).

RHYPHIDAE

- Rhyphus fenestralis**, *Scop.* At windows in house, Newport, Feb. and March (Morey).
R. punctatus, *F.* I. of W. (Verrall); in garden, Newport, June (Morley).

STRATIOMYIDAE

- Pachygaster ater**, *Pz.* Ryde, in August (Morley).
P. Leachii, *Curt.* Ryde, in August (Morley).
Nemotelus pantherinus, *L.* Abundant in Yarmouth marshes, June, 1907 (Morley).
N. uliginosus, *L.* Swept from herbage, Brading, June (Morey).

N. nigrinus, *Fln.* Swept from herbage near stream, Carisbrooke, June (Morey).

Oxycera formosa, *Mg.* Swept at Calbourne in June (Morley).

O. pulchella, *Mg.* Marvel Copse, Aug. (Butler).

Stratiomys longicornis, *Scop.* On *Cicuta*, Norton Wood, June (Morley).

Sargus flavipes, *Mg.* Ryde, Aug. (Morley).

S. cuprarius, *L.* In greenhouse, Ryde, Aug. (Morley); in garden, Ventnor, June (Morey).

Chloromyia formosa, *Scop.* Rookley Wilderness in June, and several ♀ ♀ at Calbourne in June (Morley).

Microchrysa polita, *L.* Common in garden, Newport, June (Morley); swept from grass, &c., in meadow, Newport, June and July (Morey).

Beris clavipes, *L.* In marsh near Godshill, June (Morley).

B. vallata, *Forst.* Ryde, Aug. (Morley); I. of W. (Verrall).

B. chalybeata, *Forst.* In garden, Newport, June (Morley).

Chorisops tibialis, *Mg.* Ryde, Sept. (Morley).

TABANIDAE

Haematopota pluvialis, *L.* Marvel Copse, June (Morey).

Atylotus fulvus, *Mg.* I. of W. (Morey).

Tabanus bovinus, *L.* Parkhurst (Morey).

T. autumnalis, *L.* At margin of pond, Heytesbury Farm, Aug. (Morey).

T. bromius, *L.* Parkhurst (Morey).

Chrysops caecutiens, *L.* In copse, Haven Street, June (Morley); common during the hot days of summer in gardens at Newport, where it makes its presence felt by "biting" (Morey).

LEPTIDAE

Leptis scolopacea, *L.* I. of W. (Morey).

L. tringaria, *L.* Marvel Copse, June; and on the seashore, Brook, in July (Morey).

Chrysopilus auratus, *F.* Calbourne, June (Morley); swept from herbage, Brading, June (Morey).

Atherix Ibis, *F.* I. of W. (Verrall).

ASILIDAE

Leptogaster cylindrica, *Deg.* Several at Ningwood, in June (Morley); at rest on stem of sedge with abdomen in horizontal position, moist meadow, Haven Street, July (Morey).

Dioctria rufipes, *Deg.* Wroxall, June (Morley); I. of W. (Morey).

D. Baumhaueri, *Mg.* Swept at Rookley Wilderness, June (Morley).

Asilus crabroniformis, *L.* Common at Newport (Morey).

Machimus atricapillus, *Fln.* On sedges, near ditch, Combley Wood, July (Morey).

M. rusticus, *Mg.* I. of W. (Verrall).

BOMBYLIDAE

Bombylius discolor, *Mik.* Fairly common flying to flowers (Morey).

B. major, *L.* Flying in lane, Carisbrooke, April (Morey).

B. minor, *L.* I. of W. (Verrall).

THEREVIDAE

Thereva nobilitata, *F.* Swept in Rookley Wilderness, June (Morley).

T. plebeia, *L.* I. of W. (Verrall).

SCENOPINIDAE

Scenopinus fenestralis, *L.* One at Calbourne in June (Morley).

EMPIDAE

Hybos grossipes, *L.* Swept from herbage, Parkhurst Forest, August (Morey).

H. femoratus, *Müll.* Woods at Haven Street, and at Merston, June (Morley).

Rhamphomyia tenuirostris, *Fln.* In respect to this species, Mr. F. C. Adams writes: "Curtis mentions this fly in his 'Brit. Ento.' published 1823-40, as having been taken in the Island. I have also taken it twice on the mainland—at Lyndhurst, 1900-1."

Empis tessellata, *F.* Abundant at Calbourne in June; common on flowers of *Heracleum*, Ventnor Landslip, June; on *Cicuta virosa* flowers, Shanklin, June (Morley); swept from grass, &c., in meadow, Newport, May (Morey).

E. livida, *L.* I. of W. (Verrall).

E. stercorea, *L.* I. of W. (Verrall).

E. trigramma, *Mg.* Swept in meadow, Newport, May (Morey).

E. lutea, *Mg.* I. of W. (Verrall); Calbourne, in June (Morley).

E. pennaria, *Fln.* Swept in meadow, Newport, in May; also in house, Newport (Morey).

E. grisea, *Fln.* I. of W. (Verrall).

Hilara litorea, *Fln.* I. of W. (Verrall).

DOLICHOPODIDAE

Dolichopus atratus, *Mg.* Rookley Wilderness, June (Morley).

D. Wahlbergi, *Ztt.* Swept in Parkhurst Forest, June (Morey).

D. griseipennis, *Stan.* Calbourne, June (Morley).

- D. festivus**, *Hal.* Calbourne and Shalfleet, June (Morley).
D. trivialis, *Hal.* (?) Swept in Parkhurst Forest, June (Morey).
D. brevipennis, *Mg.* Swept from herbage near stream, Newport, June; and in meadow, Newport, June (Morey).
D. aeneus, *Deg.* Calbourne, June (Morley).
Poecilobothrus nobilitatus, *L.* Ryde, August (Morley); in garden, Newport (Morey).
Chrysotus gramineus, *Fln.* Ryde in August; at Haven Street, Yarmouth, and Shalfleet, in June (Morley); swept from herbage on rough land, Gurnard Bay, June (Morey).
Argyra confinis, *Ztt.* Parkhurst, June (Morley).
A. argentina, *Mg.* Rookley Wilderness, June (Morley).
A. leucocephala, *Mg.* Ningwood, June (Morley); Combley Wood, August (Butler).
Leucostola vestita, *W.* I. of W. (Verrall).
Scellus notatus, *F.* Parkhurst Forest and Sandown, June (Morley).
Liancalus virens, *Scop.* ♂♂ on cliff side, Blackgang Chine, June (Morley).
Bathycranium bicolorcellus, *Ztt.* On hedge, Carisbrooke, June (Morey).
Aphrosylus ferox, *Hal.* I. of W. (Verrall).

LONCHOPTERIDAE

- Lonchoptera lacustris**, *Mg.* Nettlestone, in March (Morley).

PLATYPEZIDAE

- Platypeza consobrina**, *Ztt.* Ryde, Oct. (Morley).
P. rufa, *Mg.* Ryde, Oct. (Morley).

PIPUNCULIDAE

- Pipunculus varipes**, *Mg.* Rookley Wilderness, June (Morley).
P. xanthopus, *Thoms.* Rookley Wilderness, June (Morley).

SYRPHIDAE

- Pipizella virens**, *F.* On flowers of *Cicuta virosa*, Shanklin, June; Calbourne, in June; and Ryde in August (Morley).
P. flavitarsis, *Mg.* Rookley Wilderness, June (Morley).
Chrysogaster Macquarti, *Lw.* Calbourne, June (Morley).
C. solstitialis, *Fln.* On flower of *Heracleum*, in marsh near Godshill, June (Morley).
Chilosia antiqua, *Mg.* Swept from herbage near stream, Carisbrooke, June (Morey).
C. variabilis, *Pz.* I. of W. (Verrall); Calbourne, in June (Morley).
C. illustrata, *Harr.* One on flower of *Heracleum*, Ventnor

Landslip, June; and on flowers of *Cicuta virosa*, Shanklin, in June (Morley).

C. albitarsis, *Mg.* Swept from grass in garden, Newport, May (Morey).

Platychirus manicatus, *Mg.* On hedge, Pan Down, June (Morey).

P. peltatus, *Mg.* Ryde, August (Morley).

P. clypeatus, *Mg.* Swept from herbage, Brading, June (Morey).

P. angustatus, *Ztt.* Ryde, August (Morley).

Pyrophæna granditarsa, *Forst.* Spring Vale, August (Morley); Newport (Morey).

P. rosarum, *F.* On *Cicuta virosa*, Yarmouth, June (Morley).

Melanostoma ambiguum, *Fln.* In greenhouse, Ryde, August (Morley).

M. mellinum, *L.* Swept in meadow, Newport, May; near stream, Carisbrooke, June; and swept from herbage, Parkhurst Forest, in August (Morey).

M. scalare, *F.* Rookley Wilderness, June (Morley); swept in Marvel Copse, Sept.; and swept in meadow, Newport, May (Morey).

Catabomba pyrastri, *L.* Brading, in August (Butler); Blackgang Chine, June; and Ryde in Sept. (Morley); I. of W. (Morey).

Syrphus ribesii, *L.* In garden, Newport, June; Ryde, Sept.; and in greenhouse, Ryde, in August (Morley); on hedge, Pan Down, June (Morey).

S. latifasciatus, *Mcq.* Calbourne, in June; and at Ryde in August (Morley).

S. luniger, *Mg.* I. of W. (Verrall); Ryde, Sept. (Morley).

S. bifasciatus, *F.* One on flower of *Cicuta virosa*, Shanklin, June (Morley); in garden, Newport, May (Morey).

S. balteatus, *Deg.* In garden, Newport, June; at Ryde in Sept.; and in a garden at Ryde in Oct. (Morley).

S. auricollis, *Mg.* Calbourne, June; and at Ryde in August (Morley).

Sphaerophoria scripta, *L.* Swept from herbage in Parkhurst Forest, Aug. and Sept. (Morey). The var. *dispar*, *Lw.*, at Brading in August (Butler).

S. menthastris, *L.* Ryde, Aug. (Morley); swept in Parkhurst Forest, Aug. and Sept. (Morey).

Xanthogramma ornatum, *Mg.* Marvel Copse, Aug. (Butler); a ♂ on leaf in wood at Haven Street, June (Morley).

Baccha obscuripennis, *Mg.* I. of W. (Verrall).

B. elongata, *F.* Ryde, in Aug. and Sept. (Morley).

Ascia podagrica, *F.* Swept in Rookley Wilderness, June (Morley); swept in meadow, Newport, in Oct. (Morey).

Rhingia campestris, *Mg.* I. of W. (Morey).

Volucella bombylans, *L.* Several on flowers of *Cicuta virosa*, Shanklin, June (Morley); I. of W. (Morey).

Y. inanis, *L.* I. of W. (Morey).

Y. pellucens, *L.* On flowers of *Cicuta virosa*, Shanklin, June (Morley); in garden, Newport (Morey).

Eristalis tenax, *L.* Flying at flowers, Blackgang, June; and on window of house, Ryde, in Oct. (Morley); at window in house, Newport, Nov.; and in garden, Newport, in July (Morey).

E. arbustorum, *L.* On flowers of *Cicuta virosa*, Shanklin, June (Morley); in timber yard, Newport, April and May (Morey).

E. pertinax, *Scop.* Common on flowers of *Cicuta virosa*, Shanklin, June (Morley); swept in Parkhurst Forest, Sept. (Morey).

Helophilus pendulus, *L.* I. of W. (Morey).

Criorrhina oxyacanthae, *Mg.* One ♀ flying in Marvel Copse, June (Morley).

Syritta pipiens, *L.* Common at Calbourne in June (Morley); swept in meadow, Newport, June; and taken from hedge, Carisbrooke, in June (Morey).

Eumerus strigatus, *Fln.* Ryde, in Aug. (Morley).

Chrysochlamys cuprea, *Scop.* In copse, Haven Street, in June; and at Ryde in Aug. (Morley).

Sericomyia borealis, *Fln.* I. of W. (Morey).

Chrysotoxum cautum, *Harr.* On currant bush in garden, Newport, June (Morey).

CONOPIDAE

Oncomyia atra, *F.* One at Redcliff, Sandown, June (Morley).

Sicus ferrugineus, *L.* Pan Down, Aug. (Butler); I. of W. (Morey).

TACHINIDAE

Exorista notabilis, *Mg.* I. of W. (Morey).

Blepharidea vulgaris, *Fln.* Ryde, Sept. (Morley).

Thelymorpha vertiginosa, *Fln.* Redcliff, near Sandown, June (Morley).

Thelaira leucozona, *Pz.* In greenhouse, Ryde, Aug. (Morley).

Olivieria lateralis, *F.* Swept in Parkhurst Forest, Aug. and Sept. (Morey).

Servillia lurida, *F.* Calbourne, Yarmouth, and Haven Street woods, June (Morley).

Roeselia antiqua, *Fln.* Ryde, in Sept. (Morley).

Phyto melanocephala, *Mg.* On stone wall, Blackgang, June (Morley). Mr. Donisthorpe tells me that he has bred specimens of this fly from woodlice taken at Bembridge—the Dipterous pupa filling up the inside of the woodlouse.

Clista lepida, *Mg.* Ryde, in Aug. (Morley).

Sarcophaga carnaria, *L.* On flowers of *Cicuta virosa*, Shanklin, June (Morley); in house, Newport, May (Morey).

S. haemorrhoea, *Mg.* Ventnor Landslip, June (Morley).

MUSCIDAE

Stomoxys calcitrans, *L.* Ryde, in Sept. and Oct. (Morley).

Pollenia rudis, *F.* Ryde, in Sept. (Morley); many specimens hibernating in stack of deals in timber yard, Newport, Mar. (Morey).

Myospila mediatunda, *F.* Ryde, in Oct. (Morley).

Musca domestica, *L.* Abundant.

M. corvina, *F.* Ryde, in Sept. (Morley).

Cyrtoneura stabulans, *Fln.* In house, Newport, March and June (Morey).

C. pabulorum, *Fln.* Newport (Morey).

Morellia simplex, *Lw.* Newport (Morey).

Mesembrina meridiana, *L.* Haven Street and Marvel Copse, June; and common on flowers of *Heracleum*, Ventnor Landslip, in June (Morley).

Calliphora erythrocephala, *Mg.* In garden, Newport, June; and on flowers of *Cicuta virosa*, Shanklin, in June (Morley); on window in house, Newport, March and April (Morey).

C. vomitoria, *L.* In garden, Newport, June; and at Ryde in Sept. (Morley).

Euphoria cornicina, *F.* In garden, Ryde, Oct. (Morley).

Lucilia caesar, *L.* On flowers of *Cicuta virosa*, Shanklin, June; and at Ryde in Sept. (Morley); Marvel Copse, June (Morey).

L. sericata, *Mg.* Ryde, Sept. (Morley).

ANTHOMYIDAE

Polietes lardaria, *F.* On oak trunks, Marvel Copse, June (Morley); Newport (Morey).

P. albolineata, *Fln.* Garden, Newport, June (Morley).

Hyetodesia incana, *W.* Garden, Newport, June (Morley).

H. scutellaris, *Fln.* Ryde, in Oct. (Morley).

H. pallida, *F.* I. of W. (Verrall).

Mydaea vespertina, *Fln.* At Ryde in Oct., and at Spring Vale in Aug. (Morley).

Limnophora septemnotata, *Ztt.* Ryde, Oct. (Morley).

Ophyra leucostoma, *W.* In garden, Newport, June (Morley).

Pogonomyia alpicola, *Rnd.* Merston, in June (Morley).

Anthomyia pluvialis, *L.* Marvel Copse, in June; and at Ryde in Aug. (Morley).

Pegomyia transversa, *Fln.* Ryde, in Aug. (Morley).

P. nigrirarsis, *Ztt.* Ryde, in Aug. (Morley).

Homalomyia pretiosa, *Schin.* On flowers of *Heracleum*, Marvel Copse, June (Morley).

H. scalaris, *F.* Common in garden, Newport, June (Morley).

H. canicularis, *L.* On window of house, Ryde, Oct. (Morley); on window, Newport, in Nov. (Morey).

H. armata, *Mg.* Calbourne, in June (Morley).

Caricea tigrina, *F.* Swept in Rookley Wilderness, June (Morley); swept in Parkhurst Forest in Aug. (Morey).

CORDYLURIDAE

Scatophaga lutaria, *F.* I. of W. (Morey).

S. stercoraria, *L.* Common on flowers of *Heracleum*, Ventnor Landslip, June; and in garden, Newport, June (Morley); on window in office, Newport, Feb.; and flying in garden, Newport, March (Morey).

PHYCODROMIDAE

Phycodroma fucorum. Ryde, in Sept. (Morley).

Coelopa pilipes, *Hal.* Under stones on beach, Binstead, March (Morley).

HELOMYZIDAE

Helomyza rufa, *Fln.* At Ryde in Aug. and Sept. (Morley).

Blepharoptera serrata, *L.* In a stable, Newport, Feb.; and at window in house, Newport, March (Morey).

HETERONEURIDAE

Heteroneura rufipes, *Sch.* Spring Vale, Aug. (Morley).

SCIOMYZIDAE

Dryomyza flaveola, *F.* Shalfleet, in June (Morley).

Pelidnoptera nigripennis, *F.* One at Ningwood in June (Morley).

Tetanocera elata, *F.* Parkhurst Forest, June (Morley).

Limnia unguicornis, *Scop.* Haven Street woods, in June (Morley).

Elgiva dorsalis, *F.* Norton salt-marshes, in June (Morley).

E. rufa, *Pz.* Calbourne, in June (Morley).

Sepedon spinipes, *Scop.* Brading, in Aug. (Butler); swept in Parkhurst Forest, Sept. (Morey).

PSILIDAE

Psila fimetaria, *L.* Calbourne, June (Morley).

P. debilis, *Egg.* Rookley Wilderness, June (Morley); swept from herbage near stream, Carisbrooke, June (Morey).

P. rosae, *F.* In wheatfield, Merston, June (Morley).

P. atra, *Mg.* Haven Street, June (Morley).

Chyliza atriseta, *Mg.* In meadow, Newport, June (Morley).

Loxocera albiseta, *Schrk.* Swept at Bembridge in June (Morey).

ORTALIDAE

Pteropaectria afflicta, *Mg.* Totland Bay, Aug. (Butler); one at Ningwood in June (Morley); swept in Parkhurst Forest, Aug.; and on rough land at Gurnard Bay in June (Morey).

P. nigrina, *Mg.* Haven Street woods in June (Morley).

Platystoma seminationis, *F.* Common in garden, Newport, June; also on flowers of *Cicuta virosa* at Shanklin in June (Morley).

Rivellia syngenesiae, *F.* In copse, Haven Street, June (Morley).

Seoptera vibrans, *L.* In greenhouse, Ryde, Aug. (Morley).

TRYPETIDAE

Acidia heraclei, *L.* At Ryde in Aug. (Morley).

Urophora solstitialis, *L.* Haven Street woods, June (Morley).

U. stylata, *F.* On sedges near a ditch, Combley Wood, July (Morey).

U. cardui, *L.* In garden, Newport (Morey).

Icterica Westermanni, *Mg.* Mr. F. C. Adams writes me: "I have a specimen taken in the I. of W. by Mr. Beameld of Brockenhurst in 1905."

LONCHAEIDAE

Lonchaea vaginalis, *Fln.* In garden, Newport, June (Morley).

Palloptera ustulata, *Fln.* At Merston and Newport in June (Morley).

P. umbellatarum, *F.* At Redcliff, near Sandown, in June (Morley).

P. arcuata, *Fln.* In garden, Newport, also at Calbourne, in June (Morley).

SAPROMYZIDAE

Peplomyza Wiedemanni, *Lw.* Marvel Copse and Haven Street, in June (Morley).

Sapromyza inusta, *Mg.* Parkhurst Forest (Morey).

S. bipunctata, *Mg.* Shalfleet, June (Morley).

S. obsoleta, *Fln.* Swept from grass in garden, Newport, in May (Morey).

S. rorida, *Fln.* Shalfleet, June (Morley).

Lauxania Elisae, *Mg.* In garden, Newport, June (Morley).

L. aenea, *Fln.* Swept in Marvel Copse, Sept. (Morey).

OPOMYZIDAE

Balioptera tripunctata, *Fln.* Swept in Rookley Wilderness, June (Morley).

Opomyza germinationis, *L.* In garden, Newport, June (Morley); at Brading in Aug. (Butler); swept in meadow, Newport, in June, and in Parkhurst Forest in Aug. (Morey).

SEPSIDAE

Sepsis punctum, *F.* In garden, Newport, June; and at Ryde in May (Morley).

S. cynipsea, *L.* Amongst grass in garden, Newport, May (Morey).

Nemopoda cylindrica, *F.* Ryde, in Sept. (Morley).

Henicita annulipes, *Mg.* Swept on rough land at Gurnard Bay, June (Morey).

EPHYDRIDAE

Psilopa nitidula, *Fln.* Common in garden at Newport in June (Morley).

Scatella sibilans, *Hal.* On window of house, Ryde, Oct. (Morley).

DROSOPHILIDAE

Drosophila funebris, *F.* On window of house, Ryde, Oct. (Morley); in house, Newport, March (Morey).

CHLOROPIDAE

Platycephala planifrons, *F.* Luccombe and Sandown in Aug. (Butler).

Meromyza nigriventris, *Mcq.* Pan Down, Aug. (Butler).

Centor cereris, *Fln.* Pan Down, Aug. (Butler).

Chlorops taeniopus, *Mg.* Shalfleet, June (Morley); swept in meadow, Newport, May (Morey).

C. puncticollis, *Ztt.* Swept from herbage near stream, Newport, in June (Morey).

C. nasuta, *Ztt.* (?) Swept in meadow, Newport, May (Morey).

Oscinis frit, *L.* Sandown, in June (Morley).

ASTIADAE

Astia amoena, *Mg.* On window of house, Ryde, Oct. (Morley).

BORBORIDAE

Borborus equinus, *Fln.* Flying at Ryde in March, and in horse-dung at Binstead (Morley); in garden, Newport, May (Morey).

Sphaerocera subsultans, *F.* In stable, Newport, in Feb. (Morey).

Limosina limosa, *Fln.* In sand-pit, Marvel Copse, March; and on grass in garden, Newport, in May (Morey).

L. nivalis, *Hal.* (?) Marvel Copse (Morey).

PHORIDAE

Phora rufipes, *Mg.* Ryde, in Sept., and on window of house, Ryde, in Oct. (Morley); on window, Newport, in Nov. (Morey).

HIPPOBOSCIDAE

Ornithomyia avicularia, *L.* I. of W. (Morey).

HEMIPTERA.

BY E. A. BUTLER, B.A., B.Sc., F.E.S.

THE order Hemiptera contains the insects known as Plant-bugs, Water-bugs, Frog-hoppers, Scale Insects, and Aphides. They are provided with a beak-like mouth furnished with piercing bristles, by means of which they penetrate the integument and suck up the juices of plants and in some cases of animals. Leaving the scale-insects and aphides out of consideration, as we have scarcely any records of these insects from the Island, we may say that the rest of the Hemiptera are active during their whole life, passing through no helpless resting stage such as that of the chrysalis of a butterfly or moth; in other words, their metamorphosis is incomplete. The young, on leaving the egg, are in shape not very unlike what they will ultimately become, but they have then no wings; these are acquired only at the final moult. The duration of life is generally such that the whole cycle of changes is effected within the limits of a single season, but some species hibernate. That disgusting household pest, the bed-bug, and the well-known Cuckoo-spit insect are, apart from the two groups already referred to, practically the only species that are of any economic importance in this country, and hence the study of the order, as thus restricted and so far as the British representatives are concerned, is a matter of pure science, and is independent of any utilitarian interest. But as many of the species are exceedingly beautifully coloured, and several are of the most extraordinary shapes, the student is compensated by an abundant aesthetic interest, and may see in the odd shapes of some, what may be termed the humorous side of nature. There are, moreover, some curious biological problems connected with the development of some species, and very little is known of the life histories, so that there is a wide field still left for investigation.

The interesting variety of geological structure found in the Isle of Wight, with the consequent differentiation in vegetation, has produced a corresponding diversity in the indigenous representatives of an order so dependent upon plants as the Hemiptera. Every kind of habitat frequented by these insects is to be found here, and as

each has its special inhabitants, our records of the order form a thoroughly representative collection. Upwards of 300 species are included in the following lists, and these constitute something less than forty per cent of the known British species (exclusive again of Scale insects and Aphides). But these lists must not by any means be regarded as exhaustive. Undoubtedly other species exist, which diligent search in appropriate localities will in due course bring to light; and it ought not to be difficult to raise the total to at least fifty per cent of the British species.

Two sub-divisions of the order are recognised, the Heteroptera or Plant and Water Bugs; and the Homoptera, or Frog Hoppers, Scale Insects, and Aphides. Referring first to the former, we may briefly show how the insects may be recognised. There are, as a rule, two pairs of wings, of which the upper, called *hemelytra*, are stiff and horny in the part nearest the body, but flexible and membranous in the more remote part, while the lower pair are entirely membranous. The coloration is usually confined to the upper pair. When closed, the upper pair completely cover the lower, and then their own membranous parts overlap one another. A large triangular part of the second division of the thorax, called the *scutellum*, appears between the bases of the hemelytra, and by its bright colouring, often adds greatly to the beauty of the insect. This is often still further enhanced by the marking off, and the brilliant coloration, of a triangular part of each upper wing, called the *cuneus*. Thus a kind of patchwork pattern appears on the upper surface, which is not to be seen in any other order, and this arrangement of wings, combined with the beak-like mouth organs, which are bent under the body when not in use, is quite sufficient in most cases to enable the insect to be recognised as belonging to the order. The antennae are often long, but consist of few joints. Many species are exceedingly delicate and fragile, their legs and antennae being in some cases finer than human hairs; hence they will not bear handling. Most of them are found in the perfect state during August and September, some few maturing in June and July. Hibernated specimens of some species may be met with in May.

The names and initials appended in brackets to the records are those of the collectors who found the insects, and to all these gentlemen I am much indebted for information received, either directly or through their published records. The initials are explained below; where the records are not accompanied by initials or names, it is to be understood that they are the result of my own observations in August, 1907.

G.C.C.—Mr. G. C. Champion, F.Z.S., F.E.S.

C.M.—Mr. Claude Morley, F.E.S.

F.M.—Mr. Frank Morey, F.L.S.

E.S.—Mr. Edward Saunders, F.R.S., F.L.S.

The nomenclature adopted is that of the new "Catalogue of British Hemiptera," by Messrs. Saunders & Edwards, published in 1908.

HETEROPTERA

At the head of our list stand four hard-bodied species (Scutellerina), which are distinguished by the enormous development of the scutellum. This becomes so large that it forms a kind of shield covering almost all the upper surface, and hiding the wings, so that the insects look more like beetles than bugs.

Thyreocoris scarabaeoides, *L.* A little shiny bronze species, occurring on the ground amongst dead leaves. St. Boniface Down, June, 1885 (F.M.).

Odontoscelis fuliginosa, *L.* A larger insect, yellowish-brown and hairy, found in sandy places. Sandown (G.C.C.).

Eurygaster maura, *L.* A smooth brown species found amongst long grasses. Parkhurst Forest, 10 Sept., 1907 (F.M.).

Podops inuncta, *F.* A greyish-brown species found on the ground under low herbage. Sandown (G.C.C.); Ventnor (F.M.); Yarmouth. Probably generally distributed.

Next come seven species of oval bugs (Cydnina) in which the scutellum, while still large, does not conceal the wings. They are hard-bodied, mostly black, and have spiny legs.

Cydnus flavicornis, *F.* The smallest of the group. A specimen was found at Freshwater by Mr. W. Holland, of the Hope Museum, Oxford, and this is the only record of the species as a British insect. It occurs in the Channel Islands and on the Continent.

Sehirus bicolor, *L.* Shiny bluish-black with cream-coloured patches, often found amongst nettles. Sandpit at Marvel Copse (F.M.).

S. dubius, *Scop.* Steel-blue with cream-coloured margins. Sandown and Freshwater (G.C.C.).

S. biguttatus, *L.* Easily distinguished by the little yellow spot on the black ground of each elytron. Found under herbage, especially heath. One specimen in Combley Wood, Aug. 1907 (F.M.).

S. luctuosus, *M. & R.* Wholly black, except the basal joint of the antennae. Mr. Morey has a specimen without definite locality. I found a few larvae in a gravel pit on St. George's Down, Aug. 1907, which are probably referable to this species.

Gnathoconus albomarginatus, *Goeze.* Black with narrow white margins. Generally distributed. Often obtained by sweeping in early summer.

G. picipes, *Fall.* Very much like the preceding, but not so common. Sandown (G.C.C.).

The so-called Bishops' Mitres (Pentatomina, Asopidina, and Acanthosomina), large triangular bugs, yield ten species, some of which are found on trees or shrubs.

***Aelia acuminata*, L.** An almost diamond-shaped, straw-coloured species, with exquisite grey pencillings. Amongst dry grasses, with which its colour exactly harmonizes. Sandown (G.C.C. & C.M.); Culver Cliff, May, 1902 (Jennings); Parkhurst Forest, 10 Sept. 1907 (F.M.); Bembridge, Aug. 1908 (Donisthorpe).

***Neottiglossa pusilla*, Gmel.** Much smaller, but similarly coloured, and found in similar situations. Parkhurst Forest (F.M. and C.M.).

***Eusarcoris aeneus*, Scop.** A short and broad ochreous species. By sweeping in Parkhurst Forest, 10 Sept. 1907 (F.M.).

***Dolycoris baccarum*, L.** A purplish-grey, hairy species, usually found by sweeping. Sandown (G.C.C.); Parkhurst Forest, 9 Sept. 1907 (F.M.).

***Palomena prasina*, L.** Wholly dull green. Larvae abundant by sweeping at the hedge-sides. It matures later than the other species and rarely assumes the perfect form before the middle of September. Parkhurst Forest and Combley Wood.

***Piezodorus lituratus*, F.** Purple and green, or simply pale green; found commonly on furze bushes wherever these occur.

***Pentatoma rufipes*, L.** Rich brown with a bright-red tip to the scutellum; found on various trees. Copse at Godshill, July, 1883 (F.M.); Sandown (G.C.C.); Carisbrooke, 7 Sept. 1907 (F.M.).

***Eurydema oleraceum*, L.** A very handsome species, metallic green, with yellow or red spots, found on flowers. Recorded by Mr. Lewis from the Island without definite locality.

***Zicrona coerulea*, L.** Entirely brilliant shining blue. On various low plants. Ventnor (E.S.); Sandown (G.C.C.).

***Elasmostethus griseus*, L.** A small, shining, angular bug, brightly coloured with red, greenish-yellow, &c. Found on birches. Marvel Copse, June, 1887 (F.M.).

Only eight out of the 21 Coreid bugs have yet been found. They are stoutly constructed, but of more elongate shape than the preceding groups, and the antennae are often very stout and strong, so that they can be used as aids to locomotion. Most of them are of rare occurrence.

***Enoplops scapha*, F.** One of the commonest species. It is dark brown, and is found on various parts of the coast where there is rough coarse herbage, such as grasses, *Matricaria*, &c. Sandown, Ventnor, Yarmouth, &c.

***Syromastes marginatus*, L.** Very similar, but rather larger and not quite so dark. Ventnor, June, 1886, Pan Down, Shide, May, 1877 (F.M.); Sandown (G.C.C.).

***Yerlusia quadrata*, F.** Still lighter in colour, and with a most curious diamond-shaped abdomen. Culver Cliff, May, 1902 (Jennings).

Coreus denticulatus, *Scop.* Another brown species, very variable in depth of colour. Easily distinguished by the spines on its hind thighs and elsewhere. Taken by sweeping, or under low plants in sandy places. Sandown (F.M.). Usually this is the commonest species of the group. All these four use their strong antennae to assist in righting themselves when overturned.

Alydus calcaratus, *L.* An ant-like species. Larva at Niton, July, 1906 (Donisthorpe).

Stenocephalus agilis, *Scop.* A perfectly smooth and elegant species of a dark-brown colour with yellow legs marked with black. Under low plants on the coast, especially *Euphorbia*. Sandown.

Therapha hyoscyami, *L.* A very handsome species, scarlet and black, found on rest-harrow (*Ononis*). Recorded by Marshall without definite locality.

Myrmus miriformis, *Fall.* Heathy and grassy places on the downs near Shide, and in Parkhurst Forest. The sexes are very distinct, the ♂ being a narrow and parallel-sided insect of a yellowish-brown colour, and the ♀ with swollen body, coloured bright-green and red. The species is remarkable further for the fact that the majority of specimens of both sexes have their wings imperfectly developed, only a small percentage of each sex having wings fully formed.

Next follow five species (Berytidae) with very long and exceedingly thin legs, on which the body is balanced in walking, as if on springs.

Neides tipularius, *L.* The largest species. Its long, thin body and legs are suggestive of a daddy-long-legs, hence the specific name. Gravel pit on St. George's Down.

Berytus clavipes, *F.* Niton (Marshall). A rare species.

B. minor, *H.S.* Pan Down, Shide, at roots of grass.

B. montivagus, *Fieb.* Ventnor (E.S.). These three species are much alike.

Metacanthus elegans, *Curt.* A very delicate species, looking much like a gnat. Found under *Ononis* on the coast at Sandown, where the ground is sandy, but not where it is clayey.

Much remains to be done in the next family, the Lygaeidae, for out of 64 species only 25 are recorded. Most of the species are rather dull blackish or brownish, of long oval shape and medium size, some being quite small, and none really large. They are found chiefly on the ground in dry places.

Cymus glandicolor, *Hahn.* A pale yellowish insect found amongst rank herbage in damp places. Parkhurst Forest.

C. clavculus, *Fall.* Similar but smaller, found under low plants. Gurnard (F.M.).

Ischnorhynchus resedae, *Pz.* Wide, oval, flattish, with large glassy membrane, found on trees. Bonchurch (Dale).

I. geminatus, *Fieb.* Like a small edition of the preceding. Always found on heath. Parkhurst Forest.

Henestaris laticeps, *Curt.* Noted for having its eyes on the end of short stalks. On the coast near Chale (W. E. Sharp).

Heterogaster urticae, *F.* A very active, dark, shiny insect found on nettles, usually abundant where it occurs. Chalk pit, Newport (Newbery); Parkhurst Forest, Aug. and Sept., 1907.

Rhyparochromus antennatus, *Schill.* At roots of plants. Sandown (G.C.C.); Haven Street (C.M.).

R. dilatatus, *H.S.* Entirely black. Sandown (G.C.C.).

R. chiragra, *F.* A dull brownish-black insect found in sandy places. Marvel Copse and Pan Down.

Tropistethus holosericeus, *Schltz.* One of the smallest of the Lygaeidae. A rather scarce insect. Recorded by Douglas & Scott without definite locality.

Macrodema micropterum, *Curt.* An active black species with abbreviated reddish elytra, usually found commonly under heath. Only one specimen has, however, yet been met with, under heath in Parkhurst Forest.

Plinthisus brevipennis, *Latr.* A flattish, shining, pitchy-black insect, found in sandy places. Ventnor (D. & S.); Pan Down.

Stygnocoris rusticus, *Fall.* A dull-black insect usually taken by sweeping. Recorded by Douglas & Scott, without definite locality. Carisbrooke (Newbery).

S. pedestris, *Fall.* A small species with pale legs, found commonly at roots of plants in all sandy places.

S. fuliginus, *Geoffr.* Similar to the preceding, but with dark legs. Shide, Marvel Copse, &c. Probably generally distributed.

Peritrechus geniculatus, *Hahn.* Another dull greyish-black insect, larger than the preceding. Norton Wood, Yarmouth (C.M.); Luccombe Chine.

P. gracilicornis, *Put.* This is a most interesting discovery, as the insect is recorded from only one other British locality, viz., Hastings, and that was many years ago. It does not appear to have been noticed since till August, 1907, when I took a specimen in the gravel-pit on St. George's Down. It is much like the preceding, but is a little larger and has thinner antennae.

P. sylvestris, *F.* Gravel-pit at St. George's Down.

Trapezonotus distinguendus, *Flor.* A rare species. Ventnor (Lewis).

T. arenarius, *L.* Usually a common species on heathy ground, but it has only been recorded from Culver Cliff (Jennings).

Aphanus lynceus, *F.* A scarce insect, flat-bodied and of very active habits. Recorded by Pascoe, without definite locality. Usually found in moss in sandy places.

Drymus sylvaticus, *F.* A very common species at the roots of low plants. Generally distributed.

Notochilus contractus, *H.S.* Almost as common as the preceding, and found in similar situations. Parkhurst, Pan Down, Luccombe, &c.

Scolopostethus affinis, *Schill.* Carisbrooke (Newbery); Shalfleet (C.M.).

S. thomsoni, *Reut.* Amongst nettles, &c. Bembridge, Parkhurst Forest, Sandown.

S. decoratus, *Hahn.* Under heath. Parkhurst Forest, and probably in similar situations elsewhere.

The lacewing bugs (Tingididae) have yielded at present a very small proportion, only seven species out of 22. They are all small, but exquisitely beautiful in structure, their hemielytra appearing as if made of lacework. A lens is needed to see their full beauty.

Piesma quadrata, *Fieb.* Under maritime plants on the coast at Yarmouth.

Campylostira verna, *Fall.* Sandown (G.C.C.).

Acalypta parvula, *Fall.* Usually common in moss. Marvel Copse.

Derephysia foliacea, *Fall.* The most exquisite and remarkable of the group. The elytra have clear glassy meshes, and there is a sort of helmet of similar structure over the head. Found amongst dead leaves and other rubbish. Sandown (G.C.C.); Pan Down and Yarmouth.

Monanthia ampliata, *Fieb.* Obtained by sweeping. Cowes (G.C.C.); Parkhurst Forest.

M. cardui, *L.* Common on the heads of the Scotch thistle wherever that plant grows.

M. simplex, *H.S.* A rare species. Taken by Dr. Power.

The next group consists of those bugs that walk, or run, or skate on the surface of water. Popularly they are known as Water Crickets, Skaters, &c., and some or other of them are pretty sure to be found on every piece of water, whether pond, dyke, or ditch.

Hebrus pusillus, *Fall.* A very small insect found amongst *Sphagnum*. Recorded by Lewis.

Aepophilus bonnairei, *Sign.* A coast insect which lives below high-water mark and is often submerged. Totland Bay (G.C.C.).

Hydrometra stagnorum, *L.* The thinnest of our British bugs, which *walks* upon water, moving its legs in the same way as on land. It is so slender as to be difficult to see except against a pale background. At the sides of ponds and ditches generally.

Microvelia pygmaea, *Duf.* A pretty little creature of a bluish-grey appearance, which runs about on duckweed in ditches. The Yar, Brading.

Yelia currens, *F.* The water cricket. Common on streams everywhere.

Gerris thoracicus, *Schum.* This genus contains the "skaters"

which skim over the surface of ponds. *G. thoracicus* is recorded from Sandown (G.C.C.).

G. gibbifer, *Schum.* Newport (F.M.); Totland Bay, and probably on ponds generally.

G. lacustris, *L.* Commoner than the preceding, and occurring similarly. The Yar, Brading, 16 Aug. 1907 (F.M.); Heytesbury Farm.

Of the next group we have only one representative, viz.:—

Ploiariola vagabunda, *L.* An exceedingly thin-legged, narrow insect, found on trees. Freshwater (Dale); Newport, 8 Oct. 1907 (F.M.).

Of the genus *Nabis*, six* species are recorded. They are all brownish-grey bugs, and are found running on the ground amongst low plants.

Nabis lativentris, *Boh.* This seems to be the commonest species of the genus in the Island, and occurs everywhere.

N. major, *Costa.* Common and generally distributed.

N. boops, *Schiödt.* I found one specimen of this rare species in the usual habitat, under heath, in Parkhurst Forest, Aug. 1907.

N. flavomarginatus, *Schltz.* Amongst rushes, &c. in damp places. Rookley Wilderness.

N. limbatus, *Dahlb.* Amongst grasses. Generally distributed.

N. rugosus, *L.* At roots of low plants. Common and generally distributed, especially on hedge-banks.

The Saldidae are a set of oval black bugs, which are exceedingly active in their habits, running and flying with equal facility. They frequent marshy places. Nine species out of the nineteen have been recorded.

Salda littoralis, *L.* The largest species. In a salt marsh at Yarmouth.

S. saltatoria, *L.* Totland Bay and Freshwater.

S. C-album, *Fieb.* Sandown (G.C.C.); Blackgang Chine (Curtis); Isle of Wight (Dale).

S. pilosella, *Thoms.* Spring Vale, near Ryde (C.M.).

S. pallipes, *F.* In a salt marsh at Yarmouth.

S. arenicola, *Schltz.* Isle of Wight (E.S.); Sandown (G.C.C.).

S. lateralis, *Fall.* Between tide-marks, in back-water, St. Helens, 3 Sept. 1907 (F.M.).

S. cincta, *H.S.* Amongst rushes, Totland Bay.

S. cocksi, *Curt.* Spring Vale, near Ryde (C.M.).

Amongst the Cimicina, the only record is that of the common bed-bug.

Cimex lectularius, *L.* In an office at Newport, and occasionally in houses (F.M.).

* *Nabis ferus*, *L.* and *ericetorum*, *Scholtz*, in all probability occur, but there have hitherto been no records of them.

A large group of small and obscure insects, the Anthocorina, form the next group. They show a strong family likeness, are brownish in colour, and occur mostly on trees.

Lytocoris campestris, *F.* In outhouses, sheds, barns, haystacks, &c. Common.

Piezostethus galactinus, *Fieb.* Manure heap, Newport, 8 Oct. 1907 (F.M.).

Temnostethus pusillus, *H.S.* On various trees. Shide (F.M.); Parkhurst Forest.

Anthocoris confusus, *Reut.* Common on oaks, &c.

A. nemoralis, *F.* On salallows, Totland Bay.

A. nemorum, *L.* Very common on various trees and shrubs.

Acompocoris pygmaeus, *Fall.* On firs, Marvel Copse.

Triphleps nigra, *Wolff.* Carisbrooke (Newbery); one specimen at roots of plants, Freshwater. Usually on heath.

T. minuta, *L.* Spring Vale, near Ryde (C.M.); Freshwater.

Brachysteles parvicornis, *Costa.* I found a small colony of this rare insect running about on the mud at the roots of scantily growing rushes, Totland Bay, Aug. 1907.

Microphysa elegantula, *Baer.* The apterous ♀ of this insect is common on the trunks and branches of trees, running about in the crevices of the bark. It is a minute insect with red fore parts, and an almost globose blackish body, and is generally distributed. The ♂ is winged and is not so often seen. None have hitherto been recorded from the Island.

Myrmedobia inconspicua, *D. & S.* The ♀ is a minute, nearly apterous, black insect, and the ♂ is winged. Sandown (G.C.C.).

The very large family Capsidae contains the soft-bodied, handsome, and often brilliant plant-bugs, many of which are very fragile. They are as a rule gregarious; many of them are exceedingly abundant, and most are associated with definite food-plants. Upwards of 80 species are here recorded.

Pithanus maerkeli, *H.S.* A rather ant-like species, found amongst grasses and other low plants. Totland and Sandown (G.C.C.); margin of pond, Heytesbury Farm, 5 Aug. 1907 (F.M.); Pan Down and Parkhurst Forest.

Miris calcaratus, *Fall.* Common amongst grasses: gen. dist.

M. laevisgatus, *L.* " " " "

Megaloceraea erratica, *L.* " " " "

M. ruficornis, *Fourc.* " " " "

Leptopterna ferrugata, *Fall.* " " " "

L. dolabrata, *L.* " " " "

Monalocoris filicis, *L.* A small species usually found abundantly on *Pteris*. In the Island, however, it does not seem to be common, as only one specimen has been obtained after diligent search, although the fern is common. Near Rookley Wilderness.

Lopus sulcatus, *Fieb.* Black with yellowish-red markings. Ryde (Dale); Sandown (G.C.C.).

Miridius quadrivirgatus, *Costa*. A large and very dainty pale species, with rust-coloured streaks; amongst grasses. Sandown, Aug. 1908 (Donisthorpe); Pan Down, Shide.

Phytocoris tiliae, *F.* This genus contains very fragile, long-legged bugs, with mottled markings on the elytra. *P. tiliae* is greenish and has been found at Luccombe Chine.

P. longipennis, *Flor.* The most delicate of the group, found on oaks, hazel, &c. Marvel Copse and Combley Wood.

P. reuteri, *Saund.* On an apple-tree, Ryde (C.M.).

P. varipes, *Boh.* A brown species, found amongst low plants. Common and generally distributed.

P. ulmi, *L.* Another brown species, found on elm, nettles, &c. Common and generally distributed.

Calocoris fulvomaculatus, *De G.* This genus contains large and very handsome bugs. The present species has been found near Haven Street (C.M.).

C. roseomaculatus, *De G.* A handsome, red and green species; common by sweeping in chalky places; also Rookley Wilderness, 7 Aug. 1907 (F.M.).

C. bipunctatus, *F.* A green species, abundant everywhere on all sorts of low plants, including those in gardens. One of the commonest species of the whole order.

C. lineolatus, *Goeze.* Brownish green. On *Ononis*. Parkhurst Forest and Sandown.

C. ticinensis, *Mey.* A rather scarce reddish-brown species, found amongst grasses in damp places. Rookley Wilderness.

C. seticornis, *F.* A rare species, blackish with reddish or yellow markings. Luccombe (Power); Freshwater (F. S. Saunders); Sandown. The Island is one of the chief localities for this fine species.

C. infusus, *H.S.* A handsome reddish-yellow species found on oaks. Marvel Copse.

Stenotus binotatus, *F.* Amongst grasses, Parkhurst Forest (F.M.); Pan Down. Probably generally distributed.

Lygus pabulinus, *L.* A green species, with long legs and antennae. Common on nettles, &c., and generally distributed.

L. contaminatus, *Fall.* Another green species, found on birch. Marvel Copse.

L. viridis, *Fall.* Also green, but with dark markings. On various trees. Combley Wood.

L. lucorum, *Mey.* Also green, but shorter and stouter. Marvel Copse.

L. spinolae, *Mey.* Like the preceding, but paler, and with a little black spot at the apex of the cuneus. Common on nettles, and generally distributed.

L. pratensis, *L.* Common and very variable; found amongst low plants generally.

L. cervinus, *H.S.* Pale greenish-yellow. On limes. Spring Vale (C.M.); Freshwater.

L. pastinacae, *Fall.* A small and very pretty green species with black markings. Found on umbelliferous flowers. Marvel Copse.

L. kalmii, *L.* A prettily-variegated species found on nettles. Marvel Copse.

Poeciloscytus unifasciatus, *F.* I have found a dark var. of the ♀ of this species amongst long grasses at Rookley Wilderness.

P. gyllenhalii, *Fall.* A short stumpy species, dark-coloured, and covered with small golden scales which easily rub off. Pan Down, Shide, Combley Wood.

Liocoris tripustulatus, *F.* A very handsome, shining, and most variable species, found on nettles. Rookley Wilderness and Luccombe Chine.

Capsus ruber, *L.* One of the handsomest of the Capsidae, broad-bodied and shining, either black with red markings, or reddish with black markings. On nettles and other low plants. Newport and Combley Wood.

Rhopalotomus ater, *L.* A stout black insect, which has sometimes a red head. By sweeping low plants. Ventnor (F.M.); Parkhurst Forest and Brading.

Systellonotus triguttatus, *L.* The ♂ is very pretty, chocolate-coloured, with silvery bands; the ♀ is wingless, and much like an ant. Sandown (G.C.C.).

Pilophorus cinnamopterus, *Kb. (?)* A single larva belonging to this genus and probably to this species, on a fir tree in Parkhurst Forest. Both this and the preceding are associated with ants.

Orthocephalus saltator, *Hahn.* Black, covered with yellowish scales; the ♀ usually with undeveloped wings. Sandown.

Strongylocoris leucocephalus, *L.* A short, stumpy, black species, with yellowish head. Sandown (G.C.C.).

Halticus luteicollis, *Pz.* A very delicate black insect, with yellow head and very long hind legs. By sweeping, usually on *Galium*. Bembridge (Dale); Parkhurst Forest.

Dicyphus constrictus, *Boh.* This genus contains a number of bugs of elegant shape, and strongly resembling one another. The species are mostly pale, and are associated with definite food-plants; six of the seven British species are recorded from the Island. *D. constrictus* frequents *Lychnis* in Marvel Copse.

D. epilobii, *Reut.* On *Epilobium hirsutum* at Sandown, Combley Wood, and Freshwater.

D. errans, *Wolff.* On nettles. Marvel Copse.

D. pallidicornis, *Fieb.* On foxglove. Pan Down.

D. globulifer, *Fall.* On *Lychnis*. Marvel Copse (F.M.).

D. annulatus, *Wolff.* On *Ononis*. Sandown.

Campyloneura virgula, *H.S.* An exquisite species, straw-coloured and crimson, found on various trees. Marvel Copse and Luccombe Chine.

Cyllocoris histrionicus, *L.* The "harlequin bug." Very handsome and variable. On oak. Parkhurst Forest (F.M.).

Aetorhinus angulatus, *F.* A slender, green species, found on alder. Shide (F.M.); Marvel Copse.

Mecomma ambulans, *Fall.* The sexes are very dissimilar, the ♂ being long-winged and the ♀ short-winged. On low plants in damp places. Rookley Wilderness and Pan Down.

Cyrtorrhinus caricis, *Fall.* A dark greenish species, found on rushes. One specimen on side of pond, Heytesbury Farm.

C. pygmaeus, *Zett.* Pale ochreous, occurring deep down in tufts of rushes. Rookley Wilderness.

Orthotylus flavinervis, *Kb.* Almost all the species of this genus are green. The present species occurs on alders, Rookley Wilderness.

O. marginalis, *Reut.* Common on willows and sallows. Generally distributed.

O. tenellus, *Fall.* Pale, almost white; on oaks, Marvel Copse.

O. ochrotrichus, *D. & S.* Very common on various trees and plants; generally distributed.

O. flavosparsus, *Sahlb.* On maritime plants, especially Chenopodiaceae. Luccombe Chine.

O. chloropterus, *Kb.* On broom. Sandown.

O. rubidus, *Fieb.* On maritime plants, Bembridge, Aug. 1908 (Donisthorpe).

O. rubidus, *v. moncreaffi*, *D. & S.* On maritime plants. Yarmouth.

O. ericetorum, *Fall.* On heath. Parkhurst Forest.

Heterotoma merioptera, *Scop.* Blackish, with green legs and very thick black antennae. Common on nettles, &c., everywhere.

Heterocordylus genistae, *Scop.* Quite black. On broom, Shalfleet and Haven Street (C.M.).

Malacocoris chlorizans, *Fall.* Exceedingly delicate, the hemelytra being almost transparent and marked with bright-green spots. Usually common on hazel leaves; but apparently it is not common in the Island, as only one specimen is recorded from Combley Wood, although the hazel bushes have been diligently searched in many parts.

Onychumenus decolor, *Fall.* Yellowish grey. Common amongst long dry grasses in most parts. Rookley Wilderness, 7 Aug. 1907 (F.M.).

Megalocoleus molliculus, *Fall.* On *Achillea millefolium*. In coloration it closely resembles the involucres of the flowers amongst which it is found. Rookley Wilderness, Sandown, Pan Down.

Amblytylus affinis, *Fieb.* Recorded in the "Victoria History of Hants."

Macrotylus paykulli, *Mey.* A very pretty little species, light bluish-green with black markings. On *Ononis*. Sandown.

Byrsoptera rufifrons, *Fall.* Like *Mecomma ambulans*, this

species has the ♂ fully winged, but the ♀ with rudimentary wings. On nettles. Rookley Wilderness and Marvel Copse.

Phylus melanocephalus, *L.* Orange, with black head. On oaks. Parkhurst Forest (F.M.).

P. coryli, *L.* Black, with pale legs. Sandown (G.C.C.).

P. coryli, *v. avellanae*, *Mey.* Very variable, from almost black to pale reddish- or greyish-brown. On hazel. Rookley Wilderness, Marvel Copse, Shide.

Psallus obscurellus, *Fall.* This genus contains a number of small delicate bugs, more or less thickly covered with whitish scales, which easily rub off. They are all found on trees. *P. obscurellus* is black and found on fir trees. Marvel Copse.

P. variabilis, *Fall.* Very variable. On oaks. Parkhurst Forest (F.M.).

P. lepidus, *Fieb. & v. minor*, *D. & S.* Also variable, brown to reddish-yellow. On ash. Rookley Wilderness, Luccombe Chine, Marvel Copse, Brading.

P. diminutus, *Kb.* On oak. Parkhurst Forest (F.M.).

P. roseus, *F.* Very variable, from white to red, but always with pale cuneus. On salallows. Spring Vale (C.M.); Rookley Wilderness.

P. salicellus, *Mey.* Pale, speckled with brown, and with dark hind thighs. On hazel. Combley Wood.

P. rotermundi, *Schltz.* Greyish-brown, with red cuneus bordered with white. Densely covered with white scales. A very handsome species. On poplar. Freshwater.

Atractotomus mali, *Mey.* Blackish-brown, with dark thickened antennae. On whitethorn. Newport.

Plagiognathus chrysanthemi, *Wolff.* } Both very abundant every-

P. arbustorum, *F.* } where; the former greyish green, the latter very variable, from almost black through greenish to olivaceous-yellow. *P. arbustorum* is specially associated with nettles.

P. saltitans, *Fall.* Brownish-black, with leaping hind-legs. Freshwater (Dale).

Asciodema obsoletum, *D. & S.* Pale greenish-white. On furze. Rookley Wilderness, Marvel Copse, Pan Down.

Here follow the water-bugs, which have the antennae hidden in pits under the head. They contain several of the most familiar British insects.

Nepa cinerea, *L.* The "Water Scorpion." Parkhurst Forest (F.M.); Brading. Probably in ponds generally.

Ranatra linearis, *L.* The larger Water Scorpion. Parkhurst Forest.

Naucoris cimicoides, *L.* A broad and flat, oval, greenish-brown species. Common in ponds and ditches. Parkhurst Forest (F.M.); the Yar, Brading.

Notonecta glauca, *L.* The "Water Boatman." Parkhurst Forest and Brading. Probably in ponds generally.

Plea minutissima, *F.* Very small and pale. Parkhurst Forest (F.M.); Nettlestone (C.M.); Brading.

Corixa geoffroyi, *Leach.* The species of this large genus are something like the water boatman, but they swim right side up, instead of reversed, as *Notonecta* does. They are yellow with zigzag black markings. They are all found in ponds and ditches. *C. geoffroyi* is the largest and is smooth and shining, most of the others having a more or less rough surface. Parkhurst Forest.

C. hieroglyphica, *Duf.* Nettlestone (C.M.).

C. sahlbergi, *Fieb.* Brading.

C. linnaei, *Fieb.* Parkhurst Forest (F.M.).

C. limitata, *Fieb.* Nettlestone (C.M.).

C. venusta, *D. & S.* Rookley Wilderness and Brading.

C. striata, *L.* Brading.

C. fallenii, *Fieb.* Brading.

C. fossarum, *Leach.* Brading.

C. nigrolineata, *Fieb.* Rookley Wilderness.

C. praeusta, *Fieb.* In pond, Heytesbury Farm, 9 Oct. 1907 (F.M.).

C. coleoptrata, *F.* Recorded from the Island by Blatch, but without definite locality.

HOMOPTERA

Amongst the Homoptera, the Auchenorrhyncha, or Frog Hoppers, may be easily distinguished by their more or less cylindrical form, and the power of leaping they all possess, in consequence of the great development of the hind-legs. The hemielytra are narrow, more or less horny, except at the extreme tip, and when in rest are placed alongside the body, the ample wings being folded up beneath them. The antennae are comparatively short and inconspicuous, and they end in a sort of bristle which usually forms the greater part of their length. The beak is short, and is carried, as usual, bent back under the thorax. They are all vegetable feeders, and many species are attached to definite food-plants. The discrimination of the species is, in many instances, by no means an easy matter, and often the distinctive features are to be found chiefly in the genital organs of the ♂, which sometimes assume very extraordinary forms. The matter is further complicated by the fact that in some groups there are no fewer than four distinct forms to be found under a single species, viz., a short-winged and a long-winged form of both ♂ and ♀, and these are all very unlike one another. This is particularly the case with the genus *Delphax* and its allies. Several species are excessively variable, and in such cases colour and markings are no

safe guides, but attention must be concentrated on structural characteristics. The Stenorrhyncha are small, glassy-winged creatures, with antennae of moderate length. They frequent plants, and are usually gregarious. All these insects are to be found mature chiefly from August to October.

AUCHENORHYNCHA

At the head of our list are the ^QCercopidae, containing the well-known Cuckoo-spit insects, and the frothy secretion with which the larvae surround themselves is a very familiar object on the young shoots of various plants in early summer. The perfect insects are easily distinguished by their frog-like head and their cylindrical and spiny hind-legs. Six of the seven British species are recorded, the only exception being the very handsome black and crimson *Triecphora vulnerata*.

○ **Aphrophora alni**, *Fall.* Greyish-brown with two whitish patches on each elytron. A common insect on various trees. Generally distributed.

○ **A. salicis**, *De G.* Uniformly yellowish-brown. On willows. Combley Wood.

○ **Philaenus spumarius**, *L.* The "Cuckoo Spit." A most variable insect. Abundant everywhere.

○ **P. campestris**, *Fall.* Smaller and narrower. Found by sweeping in grassy places. Sandown (C.M.); Pan Down.

○ **P. exclamationis**, *Thunb.* The smallest species. Freshwater (Dale).

○ **P. lineatus**, *L.* Yellowish, with a white stripe at sides, accompanied inwardly by a black shade. Very common everywhere amongst grasses.

The next insect is the only representative of its family and is of a most extraordinary shape.

○ **Centrotus cornutus**, *L.* It has two horns projecting from the sides of the thorax, and a long blade-like process stretching backwards from its centre all along the body. A front view of it is most weird. In France it is "*le petit Diable*." Parkhurst Forest (F.M.); copse, Haven Street, in June (C.M.).

The next three insects are representatives of as many distinct groups.

✓ ○ **Ulopa reticulata**, *F.* A small, short and stumpy species, reddish-brown with two white bands. Always found under heath. It has but little jumping power. Parkhurst Forest.

✓ ○ **Megophthalmus scanicus**, *Fall.* Another short stumpy species, having the sexes very unlike. At roots of plants in damp places. Rookley Wilderness. Probably generally distributed.

○ **Ledra aurita**, *L.* The largest but one of our British Homoptera.

A most remarkable insect, with two large ear-like prominences on the thorax, and broad flattened legs. Found on oak trees. A single larva in Parkhurst Forest, August, 1907.

The next three insects are the only British representatives of the group *Tettigoniina*, and they are all conspicuous species.

○ *Tettigonia viridis*, *L.* One of the handsomest Homoptera we possess. The ♂ is dark Prussian-blue, and the ♀ bright emerald-green. The insect is generally common amongst long grasses in marshy places and by the sides of streams. Rookley Wilderness.

✓ *Euacanthus interruptus*, *L.* A very striking insect, shining black and yellow, common in hedges and generally distributed.

✓ ○ *E. acuminatus*, *F.* Similar to the last, but not so brightly coloured. Marvel Copse.

The Bythoscopina contain a number of prettily coloured insects, which are found mostly upon trees, and are usually gregarious.

○ *Batracomorphus lanio*, *L.* A fine, stout insect with large head, and with elytra bright-green or pale-brown. Found commonly on oaks. Parkhurst Forest and Combley Wood.

○ *Oncopsis alni*, *Schr.* In this genus the thorax is transversely wrinkled. *O. alni* is reddish-brown, and is found on alder. Arretton Down (C.M.); Rookley Wilderness and Luccombe Chine.

○ *O. flavicollis*, *L.* A most variable species, the typical form being reddish-brown with the fore parts bright yellow. Found on birch. Bonchurch (Dale); Marvel Copse.

○ *Macropsis nana*, *H.S.* In this genus the wrinkling of the thorax is diagonal, sloping outwards on each side from the centre. *M. nana* is a small and rather scarce insect found amongst long grass. Freshwater Down.

○ *M. scutellata*, *Boh.* & *rubi*, *Boh.* Probably both these species occur, if indeed they are really distinct. But in the absence of information as to the food plants of the specimens I have seen, it is scarcely possible to be certain as to their individual distribution. Marvel Copse, 9 Sept. 1907 (F.M.); Luccombe (Newbery); Merstone, Combley Wood, Freshwater.

○ *M. tibialis*, *Scott.* Luccombe Chine (Newbery).

○ *M. cerea*, *Germ.* A reddish-brown species found on willows. Near Merstone, Shide, Totland Bay, Luccombe Chine.

○ *M. virescens*, *F.* Green. On willows. Hedges near Merstone.

○ *Idiocerus adustus*, *H.S.* This is a large genus of handsome but difficult insects. The present species is found on willows. Bonchurch (Dale); Shide.

○ *I. lituratus*, *Fall.* A dark brownish species found on willows. Luccombe Chine, Rookley Wilderness, Freshwater.

○ *I. fulgidus*, *F.* A yellowish-green species, living on poplars. Bonchurch (Dale); Totland, Freshwater, Luccombe Chine.

○ *I. confusus*, *Flor.* Pale greenish. Found on willows. Bonchurch (Dale); Pan Down, Luccombe Chine, Totland Bay, Combley Wood, hedges near Merstone.

Many other species of this genus doubtless occur. They should be looked for on willows, sallows, and poplars.

○ **Agallia puncticeps**, *Germ.* A small greyish-white insect, found amongst low plants. Freshwater (Dale); Marvel Copse, 9 Sept. 1907 (F.M.).

○ **A. venosa**, *Fall.* Very similar to the preceding, but rather smaller. Freshwater (Dale); Sandown.

We now reach the large and important group Jassina. Of these the genus *Acocephalus* is noted for the great dissimilarity between the sexes. The ♀♀ are always dull and obscure-looking creatures, and are all very much alike; the ♂♂ are in most cases much more attractive, being generally marked with bands or streaks of pale colour on a dark background, or *vice versa*.

○ **Acocephalus nervosus**, *Schr.* The largest of the genus. Common everywhere, especially amongst nettles. The ♀ may be of any shade of colour, from pale yellowish-grey to almost black.

○ **A. albifrons**, *L.* The most variable of our species. Found commonly amongst low plants.

○ **A. fuscofasciatus**, *Geoffr.* The ♂ is white with two chocolate bands. Spring Vale (C.M.); Pan Down and Yarmouth.

○ **A. flavostrigatus**, *Don.* The ♂ has the hemielytra striped black and white. Under low plants in wet places. Totland Bay.

The rest of the Jassina consist for the most part of two groups, a stouter set which are dull-looking, chiefly of some shade of brownish-yellow, and a narrower set which appear in much brighter colours, yellow preponderating, but some are bright orange, green, or even bluish. Several of them are excessively common.

○ **Stictocoris preyssleri**, *H.S.* A whitish species, with black spots in front. Amongst grasses. Freshwater Down.

○ **Athysanus brevipennis**, *Kb.* The members of this genus are stout, shining, brownish insects, taken chiefly by sweeping amongst grasses. The present species is pale, and has occurred at Rookley Wilderness.

○ **A. sordidus**, *Zett.* Shining yellowish-grey. A common species amongst grasses. Freshwater (Dale); Rookley Wilderness and Pan Down.

○ **A. griseus**, *Zett.* Parkhurst Forest, by sweeping (F.M.).

○ **A. plebejus**, *Fall.* Freshwater (Dale); Newport and Sandown.

○ **A. lineolatus**, *Brullé.* A very common species amongst grasses. Newport, Shide, Brading, Freshwater.

○ **A. obsoletus**, *Kb.* Also a very common species. Rookley Wilderness and Brading. Probably generally distributed.

○ **A. sejungendus**, *Kb.* Much like the preceding, but with more pointed head. I discovered this species on a salt marsh at Yarmouth (see Ent. Mo. Mag., vol. xlv, p. 59).

○ **Deltocephalus ocellaris**, *Fall.* This genus contains a number of closely allied and obscure insects, which are found chiefly in

grassy places. The triangular shape of the head will easily distinguish them. The present species is recorded from Freshwater (Dale).

○ **D. socialis**, *Flor.* Freshwater (Dale).

○ **D. striatus**, *L.* Perhaps the commonest species. Freshwater (Dale); Sandown (Newbery); Newport. Probably generally distributed.

○ **D. striifrons**, *Kb.* A yellow species which I have found at Totland Bay and Pan Down.

○ **D. collinus**, *Dahl.* Discovered as a British species at St. Helens by Mr. E. Saunders.

○ **D. pascuellus**, *Fall.* Freshwater (Dale).

○ **D. cephalotes**, *H.S.* Freshwater (Dale); Pan Down.

○ **D. argus**, *Marsh.* Freshwater (Dale).

○ **D. pulicaris**, *Fall.* Freshwater.

○ **Jassus commutatus**, *Fieb.* A fine large insect. Combley Wood.

○ **J. mixtus**, *F.* On oaks and other trees. Shide, Luccombe, Marvel Copse, Freshwater.

The genera *Thamnotettix*, *Limotettix*, and *Cicadula* contain a large number of species, but are very poorly represented on our list. Of the first two genera we have two species each, but of the third no records at all.

○ **Thamnotettix dilutior**, *Kb.* A large, pale species, found on oaks. Parkhurst Forest, Newport, Combley Wood.

○ **T. attenuatus**, *Germ.* Amongst grasses. Freshwater (Dale); Totland Bay.

○ **Limotettix stactogala**, *Am.* Green, on tamarisk bushes. Ryde (C.M.).

○ **L. sulphurella**, *Zett.* A yellow species found amongst grasses. Rookley Wilderness, Totland Bay, Luccombe Chine.

The Typhlocybina consist of a number of minute, parallel-sided insects, most of which are most daintily coloured, while all are exceedingly fragile. Wherever they occur they are pretty sure to be plentiful. They are fairly well represented on our list.

○ **Alebra albostriella**, *Fall.* A handsome and very variable insect; the most striking form is yellow with a brilliant red streak on each elytron. Found on various trees, and generally distributed.

○ **Dikraneura variata**, *Hardy.* A small greenish-yellow species, occurring amongst low plants. Luccombe Chine and Totland Bay.

○ **Empoasca smaragdula**, *Fall.* A green insect found on alders and willows. Rookley Wilderness, Totland Bay, Luccombe Chine.

○ **E. populi**, *Edw.* Paler than the preceding, on poplars. Freshwater.

○ **Chlorita viridula**, *Fall.* Bright pale green. On various trees and bushes. Ryde (C.M.); Marvel Copse and Luccombe Chine. Probably generally distributed.

○ **Eupteryx urticae**, *F.* Greenish yellow with dark spots and patches. Common on nettles. Marvel Copse and Rookley Wilderness.

- *E. collinus*, *Flor.* Somewhat similar but paler. Freshwater.
- *E. melissae*, *Curt.* Very much like the preceding. On Labiatae. Freshwater (Dale); Luccombe Chine.
- *E. auratus*, *L.* Similar, but larger and more distinctly marked. Marvel Copse, Luccombe Chine, Rookley Wilderness.
- *E. atropunctatus*, *Goeze.* Very similar to the preceding, but rather smaller and paler. Carisbrooke (F.M.); Newport, 8 Oct. 1907 (F.M.); Luccombe Chine.
- *E. germari*, *Zett.* Greenish grey. On fir trees. Marvel Copse, Totland Bay, Freshwater.
- *E. pulchellus*, *Fall.* Very handsome and variable. On oaks. Marvel Copse and Rookley Wilderness.
- *E. concinna*, *Germ.* Much like the pale forms of the foregoing. On oaks. Marvel Copse, Rookley Wilderness, Combley Wood.
- *Typhlocyba jucunda*, *H.S.* A handsome greenish-yellow species with dark stripes. On alders. Luccombe Chine.
- *T. sexpunctata*, *Fall.* Pale, with black spots. On sallows. Luccombe Chine and Freshwater.
- *T. debilis*, *Dougl.* Ryde (C.M.).
- *T. ulmi*, *L.* Abundant everywhere on elms.
- *T. tenerrima*, *H.S.* A most delicate and daintily-marked species, with yellow stripes on a pale ground, and dark spots at the tips of the nervures. On brambles. Pan Down, Rookley Wilderness, Luccombe Chine.
- *T. douglasi*, *Edw.* Bright yellow. On beech. Freshwater and Newport.
- *T. gratiosa*, *Boh.* Yellowish with the clavus more or less dark. Newport and Rookley Wilderness.
- *T. crataegi*, *Dougl.* Similar to the preceding, but with the dark streak on the margin of the elytra only. In whitethorn hedges. Newport.
- *T. avellanae*, *Edw.* One of a group of closely allied yellow species, which are to be distinguished mainly by the ♂ genitalia. No doubt others occur, but I have not been able to get definite evidence of them. The present species occurs on hazel. Shide.
- *T. quercus*, *F.* A pretty little red-spotted species, common on oaks. Newport and Luccombe Chine.
- *T. nitidula*, *F.* A handsome pale-yellowish insect with a broad dark band across the elytra. On wych elm. Luccombe Chine.
- *T. geometrica*, *Schr.* Yellow, with a dark *longitudinal* streak. On alders. Rookley Wilderness and Marvel Copse.
- *Zygina alneti*, *Dahl.* Yellow. On alders. Rookley Wilderness and Luccombe Chine.
- *Z. coryli*, *Tollin.* Very similar to the preceding, but found on hazel. Marvel Copse.
- *Z. scutellaris*, *H.S.* A small greenish-yellow species found amongst fine low grasses. Pan Down, Totland Bay, Sandown.

The Cixiina may be distinguished by their flat, glassy hemielytra, and the keels upon the scutellum. The ♀ often develops white waxy filaments from the hinder end of the body, which give it a mouldy appearance. Seven species out of the ten British ones have been recorded.

○ **Oliarus leporinus**, *L.* In this genus there are five keels on the scutellum. *O. leporinus* has been found at Ryde (Dale); and in a salt marsh at Yarmouth.

○ **O. panzeri**, *Löw.* Sea View (E.S.).

○ **Cixius pilosus**, *Ol.* In this genus there are three keels on the scutellum. *C. pilosus* is one of the smallest and commonest species. Parkhurst Forest (F.M.); Sandown (C.M.).

○ **C. nervosus**, *L.* Also a common species. Ventnor Undercliff (F.M.); Parkhurst Forest, Luccombe Chine, Marvel Copse, Shide.

○ **C. stigmaticus**, *Germ.* Isle of Wight (Edwards).

○ **C. scotti**, *Edw.* Bonchurch (Dale); Sandown, on Chenopodiaceae.

○ **C. remotus**, *Edw.* Bonchurch (Dale).

Two remarkable insects come next, which are the sole British representatives of their respective groups.

✓ **Issus coleoptratus**, *Geoff.* A misshapen-looking insect, with the outer margin of the elytra bent in the middle so as to make a kind of shoulder; found amongst ivy. Newport (C.M.); Luccombe Chine, Rookley Wilderness, Marvel Copse.

○ **Tettigometra impressopunctata**, *Duf.* Something like the Cuckoo-Spit insect, but smaller. A scarce insect. Isle of Wight (Edwards).

The Delphacina are a large group, many of which are small and obscure insects, and difficult to identify. It is hardly to be wondered at, therefore, that this group has been much neglected, and that the records are very meagre. Out of the 66 species of the British fauna, only 15 are at present included in our list, though many others unquestionably occur in the Island. Down the face of these insects run either one or two keels, and this will help to distinguish them.

○ **Asiraca clavicornis**, *F.* A scarce and curiously shaped insect with thick antennae, broad flattened fore-legs, and spotted wings. Sandown (Marshall).

○ **Araeopus pulchellus**, *Curt.* The largest of the family; found low down amongst reeds. Luccombe Chine.

○ **Megamelus fieberi**, *Scott.* In the next eight genera the face has a single keel which is forked on the forehead. The present species is found at roots of plants in damp places. Bonchurch (Dale); Luccombe Chine and Rookley Wilderness.

○ **Stenocranus longipennis**, *Curt.* Amongst long grasses in very marshy places. Freshwater (Dale).

○ **Kelisia vittipennis**, *J. Sahl.* A pretty little species with a black streak on the hemielytra. Amongst low plants. Parkhurst Forest, 5 Aug. 1907 (F.M.); Pan Down.

○ **Chloriona glaucescens**, *Fieb.* This and the next two species are green, at least in the ♀, and found on reeds. Isle of Wight (Thouless).

○ **C. prasinula**, *Fieb.* Isle of Wight (Victoria History of Hants).

○ **C. smaragdula**, *Stal.* Yarmouth (Dale).

○ **Eurysa lineata**, *Perr.* Shalfleet (C.M.).

○ **Conomelus limbatus**, *F.* Probably the commonest species of the group. Abundant amongst rushes wherever these grow.

○ **Delphax difficilis**, *Edw.* Luccombe Chine, Brading, Combley Wood.

○ **D. discreta**, *Edw.* Newport.

○ **D. forcipata**, *Boh.* Bonchurch (Dale).

○ **D. exigua**, *Boh.* One of the smallest species. Grassy hillsides. Freshwater.

○ **Dicranotropis hamata**, *Boh.* In this insect the fork of the keel extends a little farther down the face than in the preceding genera. The ♂ is a remarkable-looking creature. Gurnard Bay (F.M.); Spring Vale (C.M.); Luccombe Chine and Pan Down. Probably generally distributed.

○ **Stiroma albomarginata**, *Curt.* In this genus there are two keels on the face. The ♂ has short black elytra with white edges. Freshwater (Dale); Bonchurch Down (F.M.).

STENORHYNCHA

These are a group of small insects with flat, glassy elytra, and, as a rule, prominent eyes; in general configuration they are not unlike a *Cicada* in miniature. They are often known as Jumping Plant Lice or as Flea Lice. They are usually gregarious, and wherever they occur they may generally be found in plenty. Their exact determination is often a matter of some difficulty. In our list they are poorly represented, only a dozen species being recorded out of a total of 57. Much remains to be done, therefore, before we can claim to have a fairly representative list.

Rhinocola ericae, *Curt.* A minute yellow insect, the smallest of the group, being hardly more than a millimetre in length. On heath. Near Merstone.

Psyllopsis fraxinicola, *Först.* A pale species found on ash trees. Rookley Wilderness and Freshwater.

P. fraxini, *L.* The elytra have dark markings. On ash trees. Rookley Wilderness and Luccombe Chine.

Psylla costalis, *Flor.* Newport, 8 Oct. 1907 (F.M.); Totland Bay.

P. peregrina, *Först.* Common on whitethorn. Newport, Freshwater, Totland Bay.

P. alni, *L.* The largest of the genus; found on alders. Rookley Wilderness.

P. försteri, *Flor.* Similar to the preceding, but rather smaller. Also on alders. Rookley Wilderness.

P. nigrita, *Zett.* On fir trees. Totland Bay.

Arytaena genistae, *Latr.* Common on broom. Sandown.

Trioza albiventris, *Först.* Totland Bay.

T. urticae, *L.* Common on nettles. Newport, Marvel Copse, Parkhurst Forest, Pan Down.

T. chenopodii, *Reut.* Isle of Wight, on thrift (J. C. Dale).

Students who wish for further information on British Hemiptera will find the following works useful:—

“The Hemiptera-Heteroptera of the British Islands,” by Edward Saunders, F.R.S., &c. (L. Reeve & Co., 1892). “The Hemiptera-Homoptera (Cicadina & Psyllina) of the British Islands,” by Jas. Edwards, F.E.S. (L. Reeve & Co., 1896).

“Catalogue of British Hemiptera,” by Edward Saunders, F.R.S., &c., and Jas. Edwards, F.E.S. (Milne, Tannahill, & Methven, Perth, 1908).

Also scattered notices in the “Entomologists’ Monthly Magazine.”

For British Aphides, the four vols., containing 149 plates, by A. Buckton (the Ray Society, 1875-82).

TUNICATA.

BY THE EDITOR.

TUNICATES, Ascidians, or "Sea-squirts," as some of the species are commonly called, have claimed much attention from biologists of recent years, owing to their remarkable life-histories.

Though apparently, and in reality, of the lowliest organization, as one sees the mature forms attached to seaweeds or adhering to rocks on our shores, yet in the earlier stages of each individual much greater complexity of structure is apparent on close investigation, for from each Ascidian egg there develops a tiny free-swimming larva, somewhat in the form of a tadpole, possessing a notochord, and resembling in other ways an embryo Vertebrate animal.

I will quote here a paragraph from Professor Herdman's article on the Ascidians in the "Cambridge Natural History":—

"The remarkable life-history of the typical Ascidian is of importance from two points of view: It is an excellent example of degeneration. The free-swimming larva is a more highly developed animal than the adult Ascidian. The larva is comparable with a larval fish or a young tadpole, and is thus a Chordate animal showing evident relationship to the Vertebrata; while the adult is in its structure non-Chordate, and is *on a level* with some of the worms, or with the lower Mollusca, in its organization, although of an entirely different type. And it shows us the true position of the Ascidians (Tunicata) in the animal series. If we knew only the adult forms we might regard them as being an aberrant group of Worms, or possibly as occupying a position between worms and the lower Mollusca, or we might place them as an independent group; but we should certainly have to class them as Invertebrate animals. But when we know the whole life-history, and consider it in the light of 'recapitulation' and 'evolutionary' views, we recognize that the Ascidians are evidently related to the Vertebrata, and were at one time free-swimming Chordata occupying a position somewhere below the lowest Fishes."

As to the various species which occur on and off the shores of the I. of W., I can only give the names and habitats of the few species

recorded by Mr. W. Garstang in the "Victoria History of Hants," having had no time to work at them personally, though I have seen several species when searching for Mollusca.

For information on the group as a whole, students should consult the chapter before referred to in the "Camb. Nat. Hist."; and the work on the British Tunicata which is in course of publication by the Ray Society. Those who possess a copy of Mr. J. Sinel's "Outline of the Natural History of our Shores" will find an instructive chapter, written in popular style, devoted to this interesting group.

Ascidiella scabra, Müll. Attached by the base and part of one side to shells, zoophytes, and seaweeds. Spithead and St. Helens (W.G.).

Ascidia mollis, Ald. & Hanc. Attached by the whole side. St. Helens, on boulders (W.G.).

A. mentula, Müll. Attached by the base in deep water, or by the whole side to rocks between tide-marks. St. Helens (W.G.).

A. depressa, Ald. Attached by the whole side. St. Helens, under stones on *Zostera* bed (W.G.).

Ciona intestinalis, Linn. St. Helens, on stones or clay boulders, occasionally; on walls of a tidal mill-pond, abundant. The variety *canina* is recorded from the Solent (W.G.).

Botryllus violaceus, M. Edw. Forming flat incrusting colonies of variously-coloured zooids in star-shaped clusters. Under stones, common. St. Helens, on *Zostera* bed (W.G.).

Botrylloides rubrum, M. Edw. St. Helens (W.G.).

Leptoclinum & Didemnum. Various species of these incrusting genera are abundant on the *Zostera* beds at St. Helens (W.G.).

FISHES.

BY PERCY WADHAM.

ALTHOUGH to the casual observer a *fish* usually claims a certain amount of interest, it happens that this important class of animals has received but scant attention from the Naturalist in bygone years so far as the Isle of Wight is concerned, and for any serious work in this branch of Natural History we have to hark back to as distant a date as 1849, when Dr. Martin published his list of fishes found off the Undercliff. Naturally the species occurring in that locality were very dissimilar to those inhabiting the northern coast of the Island, with its very different conditions of mud flats, creeks, and rivers. In Venables' "Isle of Wight," published in 1860, although giving such capital lists of some of the orders of animals, and devoting so much space to Nature records generally, the whole subject of fishes is dismissed in one and a half pages. The most modern list is that of Mr. G. A. Boulenger, in the "Victoria History of Hampshire and the Isle of Wight," and this is supposed to embrace our local fishes, but as the list contains very few specific records relating absolutely to the Island, I fear it cannot be of much use as a local guide, and I have not made use of any records from Mr. Boulenger's list of any shallow-water marine fishes; but I felt justified in including in my list any deep-water or migratory species which appear in the Hampshire list and of which I have no record, as the northern part of the Island being opposite to the Hampshire coast, fishes found off the mainland shores have an equal right to be included among the Island species, but where this has been done it is specially mentioned.

Round about the Isle of Wight is considered a very poor hunting ground both for the fisherman and the fish student, but whether this is due to the enormous traffic, through the Solent and elsewhere, of the battleships, torpedo boats, liners, and other steamers, or to the heavy gun-firing from the forts around the coast, or both, I am not in a position to say, but it has been proved, over and over again, that the vibration caused by the explosions, and the shells

striking the water, do affect the fish prejudicially, but whether to the extent of driving them away, it would be difficult to say with certainty.

Much remains to be done towards increasing our knowledge of the Marine Fauna, but searching the bottom of the sea is by no means an easy undertaking, and often have I gone out with the object of trawling for specimens, only to find insufficient wind to work the apparatus; but one could obviate this difficulty by using a steam trawler, if it were not for the regulation which forbids this being done within three miles from the shore. One has to rely to a great extent on the odd specimens brought to one's notice, and those captured by hooks, &c.

With regard to the freshwater fishes, I feel pretty confident that there will be no other species forthcoming to add to those already enumerated in the list, unless, possibly, the Mud Lamprey (*Petromyzon branchialis*, Linn.) might be turned up. It is a common freshwater fish in the rivers of Hampshire, where it is more often known as "The Pride."

The rivers and ponds are not extensive in the Island, as might be expected in such a small area of land, and from 25 years' close observation I fear they are getting less and less, for, in addition to the better drainage of the land, the rivers and streams have been tapped at their sources for public water supplies, and one notices there is about 50 per cent less water flowing through the streams now compared with what there was a quarter of a century ago. The majority of property owners, millers, and farmers let their ponds silt up with mud, and do not take the same interest in keeping a fine sheet of water as their predecessors did, and ponds I can remember which then contained their stock of fish, are at the present day nothing more than bog holes, containing very little water, which dries up after a few weeks of sunshine.

It may be considered rather out of place to have admitted fishes such as the Rainbow-trout and Gold-fish into this local list, but my excuse is that though not indigenous they have both bred with us in a wild state. All the species enumerated in the list are confined to salt water unless it is otherwise stated.

Thanks are due to all those who have supplied me with details of special captures, and especially to Mr. G. T. Lyle, of Brockenhurst, an amateur yachtsman and naturalist, who has done a good deal of fishing in the Solent, and consequently has been able to give much original information, as well as verifying some of the records of others.

The student has not a great choice of works treating solely of British Fishes, but among the most useful to be recommended are—Francis Day's "Fishes of Great Britain & Ireland," 2 vols., 1880-84, now out of print, but second-hand copies can be bought at a reasonable price. William Yarrell's "History of British Fishes," 2 vols., 1841, which has recently been reprinted. Couch's "Fishes

of the British Isles," 3 vols., 1862-65. W. Houghton's "British Freshwater Fishes," 2 vols., with coloured plates, 1879, published at £3 3s. 0d.; second-hand copies of this can be bought for about 18/-. Another capital handbook is W. J. Gordon's "Our Country's Fishes," recently published at 6/-; especially useful to yachtsmen and anglers who may wish to identify their captures by their outward appearance, as this book contains coloured drawings of 252 different species. For a work on the Fishes of the World, students should consult the "Cambridge Natural History," vol. vii.

TELEOSTEANS

ACANTHOPTERYGII

Perca fluviatilis, *Linn.* (Perch). This common freshwater fish seems to have been unknown in the Island until 1907, when a consignment was imported from Lincolnshire by Mr. Brigstocke, and put into two of the ponds on his estate at Ryde.

Morone labrax, *Linn.* (Sea Bass). Described by Day under the name of *Labrax lupus*. Known in many parts of the Island as the "Base," and in one or two places as the "Sea-perch." It is a common fish during the summer and late autumn, but migrates in the winter. The earliest time I have known this species to visit us has been in March; it ascends the tidal rivers in large shoals, and is then known as the "School Bass." The most noteworthy place for this fish is at "The Shingles," off the north-west end of the Island, where very fine bass fishing can be had during September, October, and November. One fisherman told me he had excellent sport in the latter month during a severe white frost. Large specimens of this fish have been taken on a "trot," some of them weighing 18½ lb.

Pagellus centrodontus, *Delaroche* (Common Sea Bream). Is a fairly common fish, more often taken on the N.E. and N.W. sides of the Island than elsewhere. Mr. Worsley Waterworth informs me that he has occasionally seen a copper-coloured bream, which he says appears quite as a distinct type from the common one; this variety may be one of the other four species taken in British waters, but not having handled one of these fish I am unable to identify it.

P. erythrinus, *Linn.* (Pandora Sea Bream). This species appears in the list of Hampshire fishes in the "Victoria History."

Mullus barbatus, *Linn.* (Red Mullet). This fish is occasionally taken, but is certainly scarce. Mr. Waterworth has seen two specimens landed on a line at Shanklin Pier.

M. surmuletus, *Linn.* (Striped Red Mullet). Dr. Martin gives records of this variety as occurring off Steephill.

Labrus maculatus, *Bl.* (Common or Ballan Wrass). This is a very common fish with us, but is more often known as the "Gold Maid," as also is the next.

L. lineatus, *Donovan* (Green Wrass). Dr. Martin, in his work on the "Undercliff," gives a record of this fish in July, 1848, but by modern naturalists it is only considered as a rare variety of the above common species. Mr. G. T. Lyle also supplies records of the green wrass.

Ctenolabrus rupestris, *Linn.* (Jago's Goldsinny, or Goldsinny Wrass). Dr. Martin collected a fine example of this lovely fish off Niton in September, 1848, and sent it to Mr. Yarrell for identification.

Crenilabrus melops, *Linn.* (Baillon's Wrass, or Conner). Is a common fish with us.

C. cornubicus, *Risso* (Goldfinny, or Goldsinny). Mr. Peel, who was a keen naturalist, collected a specimen more than 50 years ago, but I believe it is now only considered as a variety of the above.

Cottus gobio, *Linn.* (Miller's Thumb). More often known in the Island as Bull-head and Chub-head. This is a freshwater fish, and is well distributed in almost every little stream in the County, and is much sought after by the young Isaac Waltons, with their muslin nets and pickle-jars.

C. scorpius, *Linn.* (Father Lasher, or Sea Bull-head). This salt-water fish is not to be confused with the preceding species. It may be noticed in the little pools left by the receding tide, and elsewhere.

C. bubalis, *Euphr.* (Long-spined Cottus). Is also called Father-lasher in the Island, and is fairly plentiful around our shores. Dr. Martin, many years ago, records one as having been caught in a freshwater pool at Alverstone, this little wanderer having travelled the best part of five miles in fresh water.

C. quadricornis, *Linn.* (Four-horned Cottus). I have taken this species on several occasions when fishing with hook and line at the mouth of the Medina river.

Trigla gurnardus, *Linn.* (Grey Gurnard). Is occasionally taken off our shores.

T. cuculus, *Linn.* (Red Gurnard). Known also in the Island as the Cuckoo Gurnard. This is occasionally captured.

T. lineata, *Gmel.* (Streaked Gurnard, or Rock Gurnard). This fish is said to be more frequently taken than the two preceding species.

T. hirundo, *Linn.* (Sapphirine Gurnard, or Tub-fish). Is recorded in the "Hampshire Victoria History."

Agon cataphractus, *Linn.* (Pogge, or Armed Bull-head). Specimens of this small fish are to be seen in the shallow water around the coast.

Lophius piscatorius, *Linn.* (The Angler, or Fishing-Frog). This odd-looking fish is seen here occasionally. The largest specimen I ever remember handling was 4ft. 3in. long, and weighed over 40lb.;

it came from Sandown in the year 1893. Dr. Martin gives a graphic account of one of the above fish trying to swallow a red-throated diver off Ventnor in 1839; neither could free itself, and a fisherman rowed up and captured both; the fishing-frog was killed, but the diver seemed none the worse for its fight, and eventually found a place in the Zoological Gardens. A fish of this species entered the Medina river in 1907.

Cyclopterus lumpus, *Linn.* (Lump-sucker). This peculiar fish is occasionally seen with us, and Mr. H. F. Poole has just sent me information as to a specimen which has been captured this month (Dec. 1908) by some Shanklin fishermen in their sprat net.

Liparis vulgaris, *Flem.* (Sea-snail). A very common fish in all our creeks and rivers.

L. montagui, *Donov.* (Diminutive Sea-snail). Mr. L. P. Mew informs me he has taken this in a trawl off the Island.

Gobius minutus, *Gmel.* (Spotted Goby). Is plentiful everywhere.

G. ruthensparri, *Euphr.* (Two-spotted Goby). This has been taken around our shores.

G. niger, *Linn.* (Rock Goby). Is also taken around rocks, and in the Medina.

Zeus faber, *Linn.* (John Dory). Rather uncommon.

Capros aper, *Linn.* (Boar-fish). This is a very rare visitor; the earliest Island record is by Francis Day, July 4th, 1877.

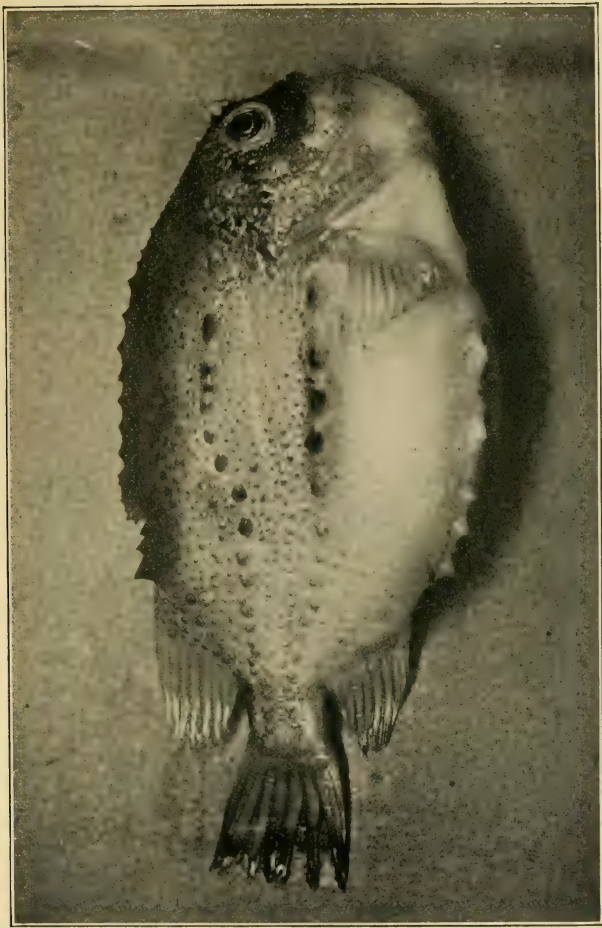
Naucrates ductor, *Cuv. & Val.* (Pilot-fish). One was recorded in the "Zoologist" as having been captured off the I. of W. in 1853.

Caranx trachurus, *Linn.* (Scad, or Horse-Mackerel). Not often seen in these waters.

Scomber scombrus, *Linn.* (Mackerel). This well-known fish is still to be found in small shoals off the S.E. and S.W. of the Island, but not often in the Solent. It is not seen in anything like so large a quantity as in years gone by, when the fishermen looked forward to the mackerel season as promising quite a rich harvest; every bay was furnished then with its large mackerel boat and complement of seine nets, but some of the boats have not been launched for the past twenty years, and can now be seen on our shores in the last stages of decay. Small shoals are still netted occasionally during the season, and those coming from Chale Bay are supposed by many to be better flavoured than any others taken along the South Coast. The name of the famous "Chale Bay Mackerel" is dying hard, and whether the fish are caught there or 100 miles away, the hawker will tell you they came from the noted place. Many reasons are given for this scarcity: among them, the heavy gun-fire from the cliff batteries, and the continual pleasure-steamer and other traffic.

Trachinus draco, *Linn.* (Greater Weever). This fish is occasionally taken. Pricks from its spines are very painful, as they convey a poisonous secretion.

T. vipera, *Cuv. & Val.* (Lesser Weever). This little fish is fairly common in most of the sandy bays, and is more venomous than the



H. F. Poole, photo.

LUMP-SUCKER (nat. size) captured off Shanklin.

preceding species. It is rather surprising that children paddling do not tread more often on what is locally called the "Sting-fish." I have been unfortunate enough on two or three occasions to make the unwelcome acquaintance of this small fish when pushing a shrimp-net in Sandown Bay, through not having taken the precaution of wearing an old pair of shoes.

Blennius gattorugine, *Bloch* (Tompot). Known better in the I. of W. as Blenny, or Cull. This species is sometimes taken in the crab-pots around the Island, and Dr. Martin, in his book on the Undercliff, gives an interesting account of a blenny he kept alive for some time in a pan.

B. pholis, *Linn.* (Shanny). Common in the pools left by the receding tides, especially at the south of the Island.

Centronotus gunnellus, *Linn.* (Spotted Gunnell, Butter-fish, or Nine-eyes). Is also to be found in the pools, and Mr. G. W. Cole-nutt, of Ryde, informs me that he often takes it in the shrimp-net.

ANACANTHINI

Gadus morrhua, *Linn.* (Cod). Is occasionally taken on "trots" laid down by the fishermen, and a few codling are caught from some of the piers by the rod anglers.

G. aeglefinus, *Linn.* (Haddock). Recorded in Mr. Boulenger's Hampshire (Vic. Hist.) list.

G. luscus, *Linn.* (Bib, Pout, or Whiting-Pout). Very common, particularly in the Solent during the autumn; although these Solent fish average a small size, much finer pout are taken off the south coast of the Island.

G. minutus, *Linn.* (Power, or Poor-Cod). Recorded in the Hampshire list, and I have every belief that it has been taken off our own shores.

G. virens, *Linn.* (Coal-fish). More frequent in some seasons than in others.

G. merlangus, *Linn.* (Whiting). Seen in fair numbers occasionally.

G. pollachius, *Linn.* (Pollack). Known also as the "Grundel" and as the "Whiting Cole." A species more common 15 or 20 years ago than now. When dried for storing this fish is called "buck-horn" by the local fishermen.

Merluccius vulgaris, *Cuv.* (Hake). More often taken at the "back of the Island" than elsewhere.

Phycis blennoides, *Bl. Schn.* (Fork-beard). Appears in the Hampshire list, and as this fish inhabits deep water I have included it here.

Molva vulgaris, *Flem.* (Ling). Not common.

Motella mustela, *Linn.* (Five-bearded Rockling). Local, although fairly common where found; Dr. Martin mentions the offensive odour they emit a short time after capture.

M. tricirrata, *Bl.* (Three-bearded Rockling). Called "Redbeard" in the I. of W. It is frequent on our rocky shores, although not so common as the preceding species.

Rhombus maximus, *Linn.* (Turbot). Mr. Peel has this species in his list of Island fishes: it is also contained in the Hampshire list.

R. laevis, *Linn.* (Brill). Is not unfrequently met with.

Zeugopterus punctatus, *Bl.* (Common Topknot). This record is taken from the Hampshire (Vic. Hist.) list.

Lepidorhombus megastoma, *Donov.* (Megrim). A deep-water fish recorded for Hampshire.

Pleuronectes platessa, *Linn.* (Plaice). Fairly common.

P. microcephalus, *Donov.* (Lemon Dab). Is sometimes taken.

P. limanda, *Linn.* (Dab). Is fairly common off our sandy shores.

P. flesus, *Linn.* (Flounder). Is frequently caught, and is the fish that is often found in our rivers beyond tidal influence, specimens having been taken so far up as Alverstone, and I am told it was quite a common freshwater fish between Alverstone and St. Helens 30 years ago, but it cannot be considered as such since the reclaiming of the land at Brading.

Solea vulgaris, *Quens.* (Sole). Regularly taken in the trawl around our coast.

S. lascaris, *Risso* (Lemon Sole). May be as common as the preceding species, but is so often confused with it.

S. variegata, *Donov.* (Thickback). I have no record of this species except from the Hampshire list.

NOTE.—Mr. G. T. Lyle informs me that Bouldnor Bight and Colwell Bay are known as nurseries for flat fish of many kinds.

PERCESOCES

Mugil capito, *Cuv.* (Grey Mullet). Fairly abundant in the Solent during summer, and fish of 5lb. and 6lb. can occasionally be seen feeding round the piles of the piers.

M. chelo, *Cuv.* (Lesser Grey Mullet). Considered to be more common than the preceding species; it is often seen in the fresh water of the river Yar at Brading Marshes.

Atherina presbyter, *Jen.* (Atherine). Fairly common, especially at the mouth of the Medina river, although this species must not be confused with the true smelt. It is, however, invariably called "smelt" locally.

Ammodytes lanceolatus, *Lesauv.* (Larger Launce, or Sand Eel). Is to be found occasionally in our sandy bays.

A. tobianus, *Linn.* (Lesser Launce). Very plentiful in suitable sandy localities, and commoner than the preceding species.

Belone vulgaris, *Flem.* (Garfish). This fish is more often known, locally, as the "Gore-fish," and possesses many other local names—such as "Sea-pike, Mackerel-guide, Green-bone, Long-nose, Gore-bill, Horn-fish, and Sea-needle." It is taken in good-sized shoals, especially in the Solent, which it enters in May.

HEMIBRANCHII

Gasterosteus aculeatus, *Linn.* (Three-spined Stickleback). This is a very common freshwater fish, and is sometimes wrongly called "the minnow" in the Island, though the minnow is entirely absent. This stickleback is also to be found in the salt and brackish water at the mouths of our rivers.

G. semiarmatus, *Cuv.* (Half-armed Stickleback). } I have found
G. trachurus, *Cuv.* (Rough-tailed Stickleback). } all these forms
G. leiurus, *Cuv.* (Smooth-tailed Stickleback). } in the Island,
 but by the modern naturalist they are considered as varieties only of the three-spined stickleback.

G. pungitius, *Linn.* (Ten-spined Stickleback). This is rather a rare freshwater fish, and is said never to be found in the sea, although very common in the little dykes at Alverstone and Sandown—the only localities I know of. It is rather interesting to note that as one walks along the banks of the dykes, and so alarms these little creatures, they immediately dive into the soft mud at the bottom, and so hide themselves until they consider the danger is past.

G. spinachia, *Linn.* (Fifteen-spined Stickleback). A marine fish, very common around our coast as well as in the Medina, and probably in the other creeks.

LOPHOBRANCHII

Siphonostoma typhle, *Linn.* (Broad-nosed Pipe-fish). This is taken in a few localities.

Syngnathus acus, *Linn.* (Greater Pipe-fish). This species frequently occurs, and I have taken it in the Medina.

Nerophis aequoreus, *Linn.* (Snake Pipe-fish). This large species appears in the Hampshire list, and being a deep-water inhabitant entitles it to a place in the Island list.

N. lumbriciformis, *Kröyer* (Worm Pipe-fish). This small species is considered as not uncommon with us and I have taken it in the Medina. Dr. Martin writes of having sent one to the late Mr. Yarrell, having the ova attached to the under and external surface of the abdomen.

Hippocampus antiquorum, *Leach* (Sea-horse). This quaint little fish is recorded as being rare off Hampshire, but I have never seen one that was taken off the Island.

PLECTOGNATHI

Tetrodon lagocephalus, *Linn.* (Globe-fish). A specimen is recorded in the "Zoologist" as having been left by the tide in the Solent in August, 1859; the fish measured $20\frac{1}{2}$ inches in length, which is a good size for this species. I have seen one or two smaller ones which have been captured in recent years.

Orthogoriscus mola, *Bl. Schn.* (Sun-fish). This peculiar-looking inhabitant of the sea is occasionally captured off our shores, and Dr. Martin mentions one, taken off Bonchurch, June 29th, 1841, which measured 4ft.7in. in length and weighed 337lb. Mr. G. T. Woods reminds me of the one recorded in "James' letters," vol. ii, page 561—a large specimen caught in the summer of 1883; and Mr. H. F. Poole sends me a photograph of one captured at Shanklin on Aug. 7th, 1903. The most recent record is of one taken off Yarmouth in 1907, which was exhibited at Newport and elsewhere.

HAPLOMI

Esox lucius, *Linn.* (Pike). The right for this freshwater fish to a place in this list rests on a single specimen still thriving in the I. of W. Union pond. It is the last fish out of three that I imported from the Itchen on Jan. 26th, 1901, for the purpose of keeping down the small rudd which infest the water.

OSTARIOPHYSI

Cyprinus carpio, *Linn.* (Carp). A common freshwater fish, although perhaps not quite so well distributed as it was forty years ago, when almost every farm pond possessed its stock of carp. It is, however, at the present day, pretty well represented in many parts of the Island. The finest carp that has ever been recorded for the county was a grand specimen, weighing 13lb. caught in the river Yar, Brading, on June 17th, 1898, by Mr. C. Worsley Waterworth with rod and line, the hook being attached to the finest of 4× drawn gut. I preserved this fish, and it is still in my possession. The pond which contains the finest average weight of fish is the one at Pond Farm, Shalfleet, and it is seldom that one under 4lb. is seen. I have landed them on a rod in this water up to 8lb. in weight, and of a lovely deep golden colour, contrasting very much with the carp from the Workhouse and other ponds, which probably take their lighter colour from the bottom of the ponds, which are composed of clay. The breeding of the carp seems very irregular here, as it does in other parts of England, owing I presume to the low temperature of the water. The spawning of the fish seems fairly regular every year, and although I have at certain seasons seen hundreds of carp fry in a small pond, yet they all seem to disappear mysteriously after a few weeks. I noticed a few yearling carp this year (1908), both in the Workhouse and Shalfleet ponds, which is quite an unusual occurrence.

C. carassius, *Linn.* (Crucian Carp). This very handsome freshwater fish is to be found in Stickworth Hall pond, near Arreton, and

I have taken specimens there weighing nearly a pound—a fair weight for this kind. In the year 1898 I observed several hundred fry of this species in one corner of the pond, but cannot say if they ever matured.

C. gibelio, *Gmel.* (Prussian Carp). Although only considered by modern ichthyologists as a variety of the Crucian, it certainly is very different in shape and colour, being much deeper and rounder than the preceding species, and not nearly of such a handsome colour. This Prussian carp is found in several ponds at Porchfield and in a pond in a shipbuilding yard at East Cowes; the fish, however, being of a very small size. Larger fish of this variety, up to $1\frac{1}{2}$ lb., are to be found in a pond at Budbridge Manor, but these I imported from the mainland in about the year 1897. I obtained from the pond at East Cowes a very interesting cross between the Prussian carp and gold-fish, a model of which I still have.

C. auratus, *Linn.* (Gold-fish). Is also considered as a variety of the Crucian carp. This well-known fish is to be found in a good many ponds where it has, of course, been introduced artificially. The finest gold-fish to be seen are in the pond at Stickworth Hall, where they have been for the past 33 years; they have never bred there to the best of my knowledge, and these fine fish, of upwards of 1 lb. weight, are the original stock. There is also the lovely pink variety to be seen in the same water. The gold-fish in the ponds at Whitehouse, Youngwoods, and other waters in the vicinity of Porchfield, although not growing to such a fine size as those above mentioned, yet breed freely. In a small pond measuring 9 yds. \times 5 yds., at Mark's Corner, the tenant planted nine gold-fish, and five years after I helped him net out 60 really nice fish, and this was only a portion of what this small pond contained. It is unusual for them to breed in open ponds, as they generally require water of a high temperature to hatch out the ova. It is very strange that it is only the gold-fish in this locality which propagate their species; the water certainly is of a higher temperature than from ponds a few miles away, and I have found it register as high as 59° Fah. in November.

Leuciscus erythrophthalmus, *Linn.* (Rudd). A fairly common freshwater fish with us, although not recorded from Hampshire; the finest examples are found in the Yar at Brading, where I have taken specimens of just upon $1\frac{1}{2}$ lb. There are numerous ponds in the Island containing these fish, but in some they do not seem to grow larger than a few ounces, although they increase fast enough in numbers. In a small pond close to the road at Bouldnor, near Yarmouth, there is a quantity of small rudd, of which about ten per cent have a deformed vertebral column, which gives a most peculiar kink to their bodies. I netted a number of the malformed ones and placed them in a farm pond which contained no other fish, to see if the offspring would perpetuate this uncommon malformation, but

unfortunately my experiment was unavailing as the pond dried up a few months afterwards, but I hope to repeat the experiment under more favourable conditions. There is also a variety with yellow fins, instead of the usual red; these seem to be found in almost all the waters that contain the normal ones.

L. rutilus, *Linn.* (Roach). The only freshwater fish of this species that I am aware of are those that were obtained from the mainland and placed in the small stream at Budbridge a few years ago; but whether they ever established themselves there I am not in a position to say, but rather doubt it, as I have repeatedly tried to keep rudd in the same locality, but they have always dropped down stream below Alverstone.

L. dobula, *Linn.* (Dace). This freshwater fish is very plentiful in the Yar, from St. Helens to Godshill, and in the upper reaches of the Medina; it is also to be found in a few ponds, but does not thrive under pond conditions. They average a fair size, weighing from four to five ounces, but it is seldom that a $\frac{1}{2}$ lb. fish is captured, and I am compelled to believe that dace were of a finer size 20 years ago, when 8oz. specimens were fairly common. It is rather strange to relate that although dace seem to thrive in almost any clear running water, neither they nor any other species of so-called coarse fish will stop in the clear running water of the Lukely brook which flows through Carisbrooke to Newport.

Tinca vulgaris, *Cuv.* (Tench). This freshwater fish (we are told in old I. of W. books) inhabited the moats around the forts at Lower Sandown, but considering these moats have been dry for a great many years, it is needless to say tench are not now forthcoming from that district. Tench, 20 years ago, were common in a pond in a copse near Lea Farm, Thorley, and although from this same pond I captured with a rod and line in the summer of 1905 a fine specimen of 2 $\frac{1}{2}$ lb., on netting the water thoroughly at a subsequent date I failed to obtain a single specimen, and came to the conclusion that the one I caught was the last. On Oct. 29th, 1906, I purchased from Lincolnshire a number of tench, and planted 15 brace of them in Pond Farm, Shalfleet. They then measured 4 inches in length and weighed about 1oz. each, and were said to be 4 years old; and on running a net through the pond in November, 1908, I found they were doing remarkably well for such slow-growing fish, for they had increased to 10 inches in length and weighed 8oz. On the same date I placed 5 brace of tench from the same consignment in the pond at Hale Manor Farm, Arreton. I also procured from Lincolnshire at this time the same quantity of golden tench, a variety of *Tinca vulgaris*, and placed 15 brace in the Shalfleet pond and 5 brace in Hale Manor pond, and these lovely lemon, gold-coloured fish, with dark spots, seem to be thriving as well as the green tench.

Abramis brama, *Flem.* (Bream). This freshwater fish is a very recent introduction to the Island, a consignment being obtained

from Sowley on the draining of the famous lake in 1907, when Mr. W. C. Mew, J.P., placed 32 bream, up to 2½lb. in weight, in his lake at Medham, and on a subsequent netting, in 1908, we found the fish were in very good condition. I also brought from this lake at the same time 10 brace of the same species for planting in another pond, but owing to the hot weather they developed fungus through being chafed in the netting and all of them eventually died.

Nemachilus barbatula, *Linn.* (Loach). This small freshwater fish is very common in the Yar between Alverstone and Sandown, as well as in the upper reaches of the Medina.

MALACOPTERYGII

Salmo salar, *Linn.* (Salmon). This is the king of fishes, which can live equally well in fresh or salt water. It ascends the Hampshire rivers for spawning, where they are obtained of a large size and in fair numbers, but I have never heard of a large specimen being landed on our own shores, although I do not doubt but that among the number of "peel" caught in the nets around the Island a few of them are young salmon.

S. trutta, *Linn.* (Sea Trout). Another species that can live equally well in salt and in fresh water, and is occasionally taken in nets in the sea. I have had one or two specimens which were said to have been caught in the Medina between Cowes and Newport, but they cannot reach the fresh water owing to an impassable barrier. By information received, there seem to be two rather distinct types of this trout, one with black or brown spots only, and the other with red spots also. The local name "Peel" is applied to both varieties, but Mr. G. T. Lyle tells me that to the fishermen of the Solent the red-spotted fish is known as the "Budge-trout." Mr. Hooper, one of the fishermen of Sandown, states as an interesting fact, which leads him to believe that there are two varieties, that occasionally he has obtained several peel in one draw of the net, and some of them can only "flop about" on their sides, while the others can keep on their bellies and work along like an eel; he has no trouble to tell the difference between the fish, even at night, as he hears them making a détour round the boat after being taken out of the net.

S. fario, *Linn.* (Brown Trout). Like almost all the trout it can exist in the sea, although better known to every one as a freshwater fish. It thrives well in many streams, perhaps being most prolific in the Lukely brook and mill dams, where I have taken specimens in recent years up to 3lb. 9oz. Examples of far greater weight are on record as having been taken many years ago at Town Gate, Westmill, and Westminster, and one of over 6lb. from Alverstone.

S. levenensis, *Walker* (Loch Leven Trout). A consignment of

these was placed in the Lukely brook by Mr. T. Mew about 25 years ago, and although a few are to be seen at the present day in the streams and ponds, the fish were never very successful, and the specimens caught are generally in ill condition.

S. irideus (Rainbow Trout). An American fish, considered to be a char, living as well in salt as in fresh water. It was first introduced in November, 1902, when 500 yearlings were presented to the Carisbrooke Fishing Association by Mr. R. B. Marston, editor of the "Fishing Gazette." These were put into the upper parts of the Lukely brook, where they breed naturally, although I fear they would soon become extinct if it were not for the artificial stocking which takes place annually, for this species is of a very migratory disposition and will make for the sea unless securely screened from doing so—an impossibility, of course, in the case of the small fry. The rainbow trout is a fine fish both from a sporting and culinary point of view, and the amount of growth this species puts on at Carisbrooke is remarkable, for I have known them increase from 2oz. to 3lb. 3oz. in 14 months. I have seen them naturally interbreeding with the brown trout, but owing to the two being of different species the ova prove infertile.

Thymallus vexillifer, Linn. (Grayling). A freshwater fish, introduced into the upper reaches of the Medina, above Blackwater, on February 12th, 1907, by the Blackwater Angling Society, who purchased from Hungerford, Berks, 64 good fish, some of them weighing $\frac{3}{4}$ lb., and although they hung about in the stream for many months and appeared to keep in good condition, I fear the experiment will not turn out satisfactorily, as so many now are dropping down stream below Shide, evidently showing that the conditions are not to their liking.

Osmerus eperlanus, Linn. (Smelt). Passes through the Solent.

Engraulis encrasicolus, Linn. (Anchovy). This species also passes through the Solent.

Clupea harengus, Linn. (Herring). More frequently seen off the west of the Island than elsewhere, although in nothing like so large a quantity as in years gone by.

C. pilchardus, Walb. (Pilchard, or Sardine). A few have been taken off the Island by herring fishers.

C. sprattus, Linn. (Sprat). Is taken in great numbers in the autumn and winter off the Needles, and in smaller quantities at the south of the Island. During one day's fishing off Dunnose this winter, Hooper Bros., of Sandown, obtained 42 bushels of sprats.

C. alosa, Linn. (Shad). A fish which, when the opportunity occurs, enters the fresh water of the rivers; it is often taken in the nets here, and I have known specimens captured with a rod and line from Yarmouth Pier.

C. finta, Cuv. (Twait). The same remarks as to habits apply to this as to the preceding species; it is recorded as being taken in Southampton Water.

CHONDROSTEI

Acipenser sturio, *Linn.* (Sturgeon). A fisherman of Newport, named Alec Carley, told me that he captured a fish answering to this description, about 40 years ago, in the Medina: it was about 5ft. long. I have every reason to believe him, for he was a faithful observer of Nature, and it is a fish he could scarcely mistake for any other.

APODES

Anguilla vulgaris, *Turt.* (Eel). Can live as well in fresh as in salt water, and is to be found in almost every river and small stream; also in a good many stagnant ponds, though it is considered that the species must and does migrate to the sea to breed, where the larval form, known as *Leptocephalus brevirostris*, *Kaup*, has been found at 100 fathoms deep or more. These so-called freshwater eels are to be found in great numbers in the late summer and autumn in the brackish water of the Medina on their way to the sea, from which they seem never to return, but in the spring vast numbers of young eels, called elvers, ascend the fresh water of the rivers and streams, and sometimes crawl over the damp fields into isolated ponds. Twenty years ago I have seen at least 100 of these elvers at a time climbing the outlet hatches to get into the ponds, and the ease with which they could wriggle up a 10ft. perpendicular hatch was astounding. This would continue for some weeks, which meant a pretty good stock of eels for the streams and ponds; but at the present day there is nothing like the number of elvers ascending our streams there was then. Comparing the Lukely ponds and streams with what they were as I remember them 20 years ago, I do not believe there is one eel now to 50 which could then have been found. All three varieties of this eel are to be found in the Island: the sharp-nosed, middle-nosed, and blunt-nosed. Some naturalists have regarded these as three distinct species, and others as two, but as modern zoologists will only acknowledge one species, there is no need for me to dwell on the special localities where the broad-nosed and others are found.

Conger vulgaris, *Cuv.* (Conger). Fairly common, though not taken of a great size, and it is unusual to hear of a specimen weighing over 10lb.; I am, however, informed that they have been taken up to 40lb.

CHONDROPTERYGII

Notidanus griseus, *Cuv.* (Six-gilled Shark). A female of this rare shark, measuring 11ft. in length, is recorded by Dr. Martin as having been hooked on a long line, Nov. 15th, 1845, off Dunnose.

Scyllium canicula, *Linn.* (Rough-hound, [Suss, I. of W.], or Small-spotted Dogfish). This is a common fish, and seems more plentiful during some seasons than in others. It is this species which is edible and is relished by a good many people. The empty egg cases of this fish, as well as the next, are often found along the shore.

S. stellare, *Linn.* (Nurse-hound, or Large-spotted Dogfish). Is taken in fair numbers on "trots" by the fishermen for the purpose of baiting their crab and lobster pots, as is the preceding species.

Selache maxima, *Linn.* (Basking Shark). A huge specimen of this shark, 28ft.10in. in length and 13ft. in circumference, was stranded at Shanklin, where 50 men were unable to drag it up the beach out of reach of the tide. The head and shoulders can now be seen preserved in the British Museum (Natural History) at South Kensington. It states on the descriptive label that it came ashore in March, 1875. A small one, measuring 6ft. long and weighing about 1½cwt., was caught by a fisherman named Mursell off Dunnose in 1907 while fishing for mackerel.

Carcharias glaucus, *Cuv.* (Blue Shark). A fair number of these have been caught in nets during the past 30 years, most of the specimens being captured off Sandown and Shanklin. Although this fish attains the length of 25ft., I have never heard of one locally, measuring over 7ft.

Alopias vulpes, *Gmel.* (Thrasher, Fox Shark, or Sea-fox). A male, 15ft.4in. long, was caught in a mackerel net, 9 miles from Ventnor, in 1864. On Sept. 13, 1905, three fishermen—Sothcott, Mursell, and Dyer—captured one in Sandown Bay measuring 9ft. in length, and another the next day 9ft.3in. long. There is also a specimen about 5ft.6in. long, which was caught in the Bay a few years ago and is now preserved in the Sandown Arcade.

Mustelus laevis, *Flem.* (Smooth-Hound). Occasionally taken on the long "trot" line.

Galeus vulgaris, *Flem.* (Common Tope, or Penny Dog). Is also taken on the "trot" at times.

Acanthias vulgaris, *Risso* (Picked Dog-fish, or Bone Dog). Is also taken off our shores.

Rhina squatina, *Linn.* (Monk-fish, Angel, or Shark-Ray). Specimens are on record of this species.

Lamna cornubica, *Cuv.* (Porbeagle). Dr. Martin says that a small shoal is usually seen passing along the coast during the autumn, and in 1847 one or more were captured off Bonchurch by a party who went in pursuit of them, and thus identified the species. A

shark, of which I have seen a photograph, caught off Sandown recently by a fisherman (Jack Mursell) appears to be of this species.

Raia batis, *Linn.* (True Skate). Is quite a common fish with us, and Mr. Conway, of Colwell Bay, informs me that he once took a skate off the Island (which I presume was of this species) weighing 160lb.

R. clavata, *Linn.* (Thornback). Is a very common fish.

R. maculata, *Montagu* (Homelyn, or Spotted Ray). This is occasionally seen with other species amongst a catch of skate.

R. oxyrhynchus, *Linn.* (Long-nosed Skate). Dr. Martin includes this in his list of fishes taken off the Undercliff.

R. chagrinea, *Pennant* (Shagreen Ray). This also appears in Dr. Martin's list.

Trygon pastinaca, *Linn.* (Sting Ray). Occasionally netted, greatly to the fisherman's disgust, for it does much damage to the nets by the formidable serrated spine on its tail; in fact it is quite a dangerous fish and requires handling with great caution. Mr. George Kearley, of Newport, nearly lost his life about 6 years ago, through a ray of this species. When fishing at King's Quay he netted one of these creatures in shallow water, and while endeavouring to drive it on to the shore, it plunged its spine through his thick leather water-boots and trousers into his leg, which caused a terrible mortifying wound. He was detained at the I. of W. Infirmary for a long time, and it was months before he could dispense with his crutches.

Myliobatis aquila, *Linn.* (Eagle Ray, or Whip Ray). Recorded from off Christchurch in October, 1880.

CYCLOSTOMATA

Petromyzon marinus, *Linn.* (Sea Lamprey). A marine fish which ascends rivers to breed, and is very rarely taken here. Mr. G. T. Woods informs me that a specimen was netted at Sandown in 1907, and this lamprey is on record from Colwell Bay.

P. fluviatilis, *Linn.* (Lampern). A common freshwater fish, more often known as Nine-eyes. It is observed most frequently in the spring, when seeking the shallow streams for breeding. I have noticed this species in the upper reaches of the Medina, in the Yar at Alverstone, and in the Lukely brook.

AMPHIBIANS.

BY PERCY WADHAM.

OUT of more than a thousand existing species of Amphibians, only seven* are indigenous to Britain, and of these five occur in the Isle of Wight. The class Amphibia consists of three orders: Apoda, comprising some limbless, burrowing forms, found for the most part in tropical countries, and not represented in Britain; Urodela, or newts, of which we have three kinds; and Anura, frogs and toads, of which the Island can boast of but one each, out of the 900 known species. The Edible Frog and Natterjack Toad are the two British species that are absent from the Island.

URODELA

Triton cristatus (Crested Newt, or Evet). This fine newt, the male of which has a crest only during the breeding season, is fairly common in most parts of the Island. It is not quite so handsome as the next species, as it appears whilst in the water to be almost black, but when taken out is found to have handsome colours on the under parts.

T. vulgaris (Common, Spotted, or Smooth Newt). Is the most frequent newt in the Island, being found in almost every pond and ditch during the few months in which it takes to the water for the purpose of propagating its species. It is very handsome in its courting dress, the male having a pretty crest and exhibiting brilliant colours.

T. palmatus (Palmated or Webbed Newt). Though not so common as the preceding species, it is found in ponds in many parts of the Island. It is rather smaller than the smooth newt, and does not possess such a high crest; it is only the males which have the hind feet webbed. I have found this newt inhabiting the water as late as November, which I should think very unusual, as newts usually leave their ponds for the land when the breeding season is over.

* If we exclude the Edible Frog, which some writers believe is not truly indigenous, it reduces the number to six.



H. F. Poole, photo.

COMMON GRASS SNAKE :

This specimen was 3ft. 6in. long and was found near Godshill.

ANURA

Rana temporaria (Common Frog). This is fairly common everywhere, and is most often seen in numbers in the spring. At this time frogs congregate in stagnant ponds for breeding purposes. I have seen frogs' spawn at Carisbrooke as early as the 20th of Jan.; and the Rev. H. M. Livens informs me that he saw some tadpoles in a pond on Garstons Down, last year (1907), as late as the 21st of Oct.

Bufo vulgaris (Common Toad). The toad is generally distributed, but, of course, favours drier situations than the frog. The spawn may be seen in certain ponds, and may be easily recognized by the double rows or strings, which look like glass tubes filled with black beads, whereas the spawn of the frog is deposited in shapeless masses. Although frog spawn is more frequently met with than that of toads, yet the latter animal in its adult state seems to be the commoner of the two.

Hyla arborea (Green Tree-frog). Dr. Martin, writing in 1849, refers to a report that some tree frogs had formerly occurred on some large trees near St. Lawrence, and suggests that they had been introduced and had become partly naturalized. This reported attempt to naturalize this species may have induced Lord Walsingham to liberate, as he did, a number of these frogs in his grounds at St. Lawrence a few years ago. These seem quite to have established themselves, for they breed regularly in a small pond in front of his house. The male of this species is provided with a large vocal sac in the throat, which is inflated to a great size when the frog is croaking, and it is doubtless owing to this that the little creature is able to make such a noise. Some residents at St. Lawrence inform me that the not unmusical chorus of the males can be heard at least half a mile away on a still spring evening. I am also told that a number of green tree-frogs escaped from a greenhouse at Freshwater a few years ago, and since then have bred in a pond near Tennyson Road.

REPTILES.

BY PERCY WADHAM.

THE Reptilia comprise the crocodiles, tortoises, lizards, and snakes. The class is but poorly represented in the British Isles, for out of 3500 known species of Reptiles we possess but six—three lizards and three snakes. All of these are found in Hampshire, but the sand lizard and smooth snake appear to be absent from the Island. Ireland, in spite of the popular impression to the contrary, has one representative of the Reptilia in the form of the common lizard, which occurs locally in that country.

LACERTILIA (LIZARDS).

Lacerta vivipara (Common or Viviparous Lizard). This active little creature can be seen during spring and summer in most parts of the Island. The female sometimes lays nearly a dozen eggs, and from these the young escape immediately. These little ones then measure about three-quarters of an inch in length, but when mature are from five to seven inches long. The accompanying picture illustrates the egg, a young specimen, and adult of this species.

Anguis fragilis (Slow-worm). Is numerous in suitable localities. It is known as the "Blind-worm" in some parts of the Island, which is curious, as its bright eyes do not suggest blindness, but possibly its habit of taking so little notice of a person approaching, when basking in the sunshine, may have given rise to the name. This lethargic habit, however, seems especially characteristic of the female a week or so before the eggs are laid. It is a great pity that this harmless creature is so ruthlessly destroyed by ignorant people who class it with the obnoxious adder, whereas it is but a legless lizard, which feeds upon insects, slugs, and worms, and on the whole may be regarded as a benefactor to mankind. An instance has come to my notice of slow-worms congregating for their winter sleep: on Oct. 14th, 1897, a man when digging a post hole in sandy soil at Fairlee, came across a heap of nineteen of them.



H. F. Poole, photo. COMMON LIZARD: two-thirds nat. size.



H. F. Poole, photo. YOUNG LIZARD—2 OR 3 DAYS OLD.



H. F. Poole, photo. EGG OF LIZARD—IN THE FOREGROUND.

OPHIDIA (SNAKES).

Tropidonotus natrix (Common, Grass, or Ringed Snake). The "Common Snake," although individual specimens are to be found in almost every part of the Island, can scarcely be regarded as *common*. It would, however, be more numerous if it received more protection. As it is, nearly every person who happens to come across this beautiful and harmless creature, if he possesses a stick, thinks it his duty to kill it. The number of eggs deposited varies according to the age and size of the snake, about 30 being the usual number; but a large one, measuring 3ft. 6in. in length, killed near the Medina on June 9th, 1900, contained 40 eggs. Mr. G. T. Woods has a snake in his collection which measures 3ft. 10½in. and was captured on Bembridge Down. The fine specimen shown in the illustration was photographed by Mr. Poole.

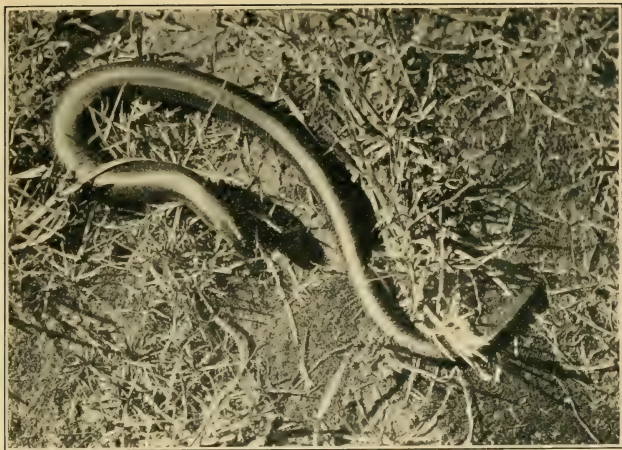
Vipera berus (Viper or Adder). This is more abundant than the grass snake, being found on rough dry land in every part of the Island. It occurs, too, in marshy places such as withy beds, where I have found it not infrequently basking in sunshine on a dry tuft of grass. I think it must have been still commoner 60 or 70 years ago, as the Rev. C. A. Bury, in Davenport Adams' "History of the I. of W.," remarks that he frequently saw seven or eight vipers during a walk in the spring, which would be a very unusual number to see at the present time. In the same work it is stated that a keeper named Loe, living at Newchurch, saw on a rough piece of land near Alverstone Farm, "near a bushel of adders" all lying together, and having discharged his gun amongst them he counted seventeen heads. This very desirable decrease in the numbers of this reptile is doubtless due to the closer cultivation of the land, the larger number of gamekeepers who destroy all they can find, and the increase of population. As to the length of the Island adders, I consider that the average is about 1ft. 9in.; I have seen a good many as much as 2ft., and two specimens 2ft. 3in. long. I believe it is usual for all the eggs to be extruded at the same time, and the young to escape from them immediately, but with ten specimens I had born in a vivarium the time extended over nine days. There is great variation in the colour of vipers; both the red and the black varieties are found in the Island. Personally, I think the colour depends partly upon the sex and age of the individual, and to some extent upon the time which has elapsed since the skin was shed. The earliest date that I have seen the viper abroad after its hibernation is Feb. 26th.

INTRODUCTIONS, &c.

Lacerta viridis (Green Lizard). A number of European green lizards, either of this species or a closely-allied form, were liberated, about 1899, at Belvedere, St. Lawrence. The natural rocky subsoil, and the many foreign creepers and other plants, as well as the sunny aspect of the cliff gardens, seemed to form a happy home for these little visitors. Here they lived and bred for several years, but on making two or three special journeys to these gardens during the present year (1908), I failed to see a single specimen. Mr. May, the head gardener at Belvedere, fears that the very exceptional fall of snow which took place in April last, and the accompanying cold weather, was more than these little foreigners could stand. He picked up several dead lizards at that time, and has seen no living ones throughout the summer, so it is to be feared they have all perished.

Thalassochelys caretta (Loggerhead Turtle). A female turtle of this species was found alive on July 7th, 1899, on the shore between Porchfield and Newtown. Though ordinarily frequenting tropical and subtropical seas the species has a wide range of distribution, being found in the Mediterranean and off the Portuguese coast, and occasional wanderers have reached the British shores, especially those of Devon and Cornwall. It is therefore a matter of great interest to be able to record the occurrence of one of these rare visitors in the Solent. Adult specimens are said to be more than three feet in length, but this was evidently a young one as it was but a foot long and eight inches across, with overlapping shields and deeply serrated edges. I kept this turtle alive in an aquarium for several months, and, being strictly carnivorous, it lived only on flesh, devouring raw beef, &c., ravenously. The specimen was seen and kindly identified as a "loggerhead" by Mr. C. Tate Regan of the British Museum.

Emys orbicularis (European Pond-tortoise). A number of these were introduced into Old Park pond, St. Lawrence, some years ago, and although I cannot ascertain if they have bred there, on paying a visit in November, 1907, there were plenty of them alive, for I saw several lying at the bottom of the pond. Mr. White, of St. Lawrence, told me he often found them roaming about in different parts of the park. In the summer of 1907 I found one of this species living in Carisbrooke mill-pond, but do not know from whence it came.



H. F. Poole, photo. SLOW-WORM—FROM THE LANDSLIP.



H. F. Poole, photo.
 ADDER PREPARING TO STRIKE: ROOKLEY.

BIRDS.

BY REGINALD H. FOX.

THE conditions which obtain in the Isle of Wight are eminently suited to bird-life. Marsh, upland, woodland, meadow-land, cliff—we have all these, and though mud-flats are lacking, they are so near at hand that wanderers from the several species which depend on such flats for their living come to us not infrequently. Our climate is mild, our Flora very varied, thereby insuring an equally varied and abundant supply of insects for our soft-billed birds: what more could we want to encourage birds to come to us, and to keep them here when they have come? Our copses are alive with warblers throughout the spring and summer: they come to us early, and stay late. Turtle-doves, nightjars, the swallow tribe—who can claim to be more favoured by these charming visitors than we are? Throughout the year our gardens and hedgerows swarm with blackbirds and thrushes, robins and hedge-sparrows; and it is, indeed, a rare week in the year that does not produce bird-song of some sort for us.

Our shores are tenanted with flocks of the commoner gulls for nine months out of the twelve; our cliffs form admirable nesting-sites for the herring gulls and a few lesser black-backed gulls, cormorants, puffins, guillemots, and razor-bills; and we can still claim the distinction of providing an eyrie for a pair of peregrines, which lord it over the noble headland at Freshwater, and another at the Culver, which headland was noted some hundreds of years ago for producing falcons of great courage, which were much sought after for hawking in those days. The ravens at Freshwater may probably be considered as being among the oldest inhabitants there. Sea-ducks, divers, grebes frequent our coasts throughout the winter months, and many a rare stranger has been seen or obtained there.

The reclaimed land, once Brading Harbour, which stretches from Brading to Bembridge, is carefully preserved by Sir John Thornycroft, and thus forms a safe refuge for many charming birds, both for breeding and as a winter resort.

The finches are with us always, goldfinches and bullfinches being delightfully frequent; game-birds do well; we always have a fair

stock of partridges, and wild pheasants breed freely in our sunny and well-watered copses. Yet, though we are a game-preserving people, there are many odd corners which the keepers never trouble, where sparrow-hawks, jays, crows, and magpies bring off their broods, and the Island is thus kept fairly stocked with the so-called "vermin," so rigorously kept down in many large areas.

Many—I hope most—of our land-owners give strict orders about the preservation of kestrels and owls, and these, I think, tend to increase with us. Our low-lying pasture-lands, commonly called "the marshes," form good feeding-grounds for mallard and snipe: sometimes, at the beginning of a frost, the latter are very numerous, though the larger wisps never stay long. Larks, titlarks, buntings, linnets, are all abundant, and are often to be found in vast flocks in our stubbles and uplands during the winter months; and as to rooks, jackdaws, and starlings, they tend to become a pest, so numerous are they in every part and at all times.

I think the Island has every reason to be proud of the wonderful list of species of birds which it can claim to possess; but it has even more reason for pride in that the commoner birds are so numerous everywhere, proving by their constant presence that they appreciate the welcome we extend to them and the care we take of them. I hope the Island will always be noted as a district where birds are peculiarly plentiful and exceptionally well treated.

ORDER—PASSERES

FAMILY—TURDIDAE

Turdus viscivorus (Missel Thrush, Squawking Thrush). This thrush is very common throughout the Island, and breeds in all suitable localities. It may be seen in small flocks throughout the autumn and winter, and has certainly increased enormously in the last twenty years. Pugnacious at all seasons, during the breeding season those in our gardens wage special war with the jackdaws, and spend much time in driving them away from the neighbourhood of the nest. Last year a pair nested close to my house, and one of these having seen the reflection of himself in a window, took up his quarters on a wall hard by, and for three days battled constantly with the supposed intruder, flying with great violence against the glass: I drove him away frequently, but to no effect. The missel thrush suffers less in winter than most of its tribe, owing to its special habit of keeping certain berried trees—hawthorn or holly—

for its own use, and driving away all other birds. It has a grand, free, joyous song, which may be heard on any bright day in the winter or early spring.

T. musicus (Song Thrush, Thristle). A very abundant species. Whether owing to the "Wild Birds Protection Act" or mild winters, our three resident thrushes have all increased amazingly in late years. Blackbirds and thrushes rise in hundreds from the turnips during September before shooting parties, when no doubt they do immense good in eating the larvae of Lepidoptera, particularly that of *A. segetum*. They are very hard on all small fruit, and have taken of late years to eating apples on the trees, and outdoor tomatoes also. I find spotless, brown-spotted, and heavily blotched thrushes' eggs not unfrequently in the Island. This spring I was shown a thrush at Shanklin with a pure white head, the white reaching below the eye. He was singing gaily when I saw him.

T. iliacus (Redwing). Always abundant in winter. I cannot agree with Kelsall and Munn when they state that the redwing is not so gregarious as the fieldfare. Here at any rate they are always in flocks, and I think they are quite as abundant as the fieldfare; but, being inconspicuous and far less noisy, the redwings often escape notice.

T. pilaris (Fieldfare, Pigeon Thrush). Common winter visitors. I generally first hear them passing overhead in some part of the month of September. As mentioned by Gilbert White, they certainly roost on the ground; I have disturbed them often from a rough hillside in Scotland, coming down after dark from flight-shooting.

T. sibiricus (Siberian Thrush). Mr. Howard Saunders, in his Manual, says: "I fully believe that one was picked up exhausted at Bonchurch, I.W., in the winter of 1874, but the evidence is not sufficient to warrant the introduction of this species into a British list."

T. merula (Blackbird). Common everywhere—too common, many people think, when they are suffering from this bird's insatiable appetite during the small-fruit season. Individuals with white heads, white feathers in the wing, &c., are quite frequent. There is a pure-white blackbird in the grounds at Osborne at the present time (July, 1907), which should be safe from the persecution which is the lot of most unusual varieties of birds wherever seen. The Isle of Wight is noted for the number of pied blackbirds seen there: birds with some small portion of white are hardly remarkable with us.

T. torquatus (Ring Ousel). To be found in the Island during spring and autumn migration, but very sparingly. I have personally only seen it in the autumn, and that rarely.

Saxicola aenanthe (Wheatear). I think this is our earliest summer visitor in the Isle of Wight, and one of the latest to leave us. I have seen it several times in February, and in the autumn quite late in October. I have never found the nest in the Island, but they no doubt breed about the downs in moderate numbers.

Pratincola rubetra (Whinchat). A summer visitor. I remember it as certainly more frequent than now a good many years ago. I see family parties of four or five often in September when shooting.

P. rubicola (Stonechat, Furzechat). A common resident, very noisy in the nesting season; an early breeder.

Ruticilla phoenicurus (Redstart, Firetail). A summer visitor; never common. I often see immature specimens in the autumn, but have never found a breeding pair. It may well be, however, that they breed with us on occasion.

R. titys (Black Redstart). A rare winter visitor. It was obtained in the Island in 1882, and Bury noted it in 1842—1844. Dr. Cowper observed a specimen in early spring some years since. A female was procured by Mr. H. F. Poole, at Shanklin, February 4th, 1908.

Cyanecula wolfi (White-spotted Bluethroat). One seen near Bonchurch in 1865 by Hadfield.

C. suecica (Red-spotted Bluethroat). Two specimens seen in the Island—by Hadfield in 1866, and one found at Yaverland in 1903, but not preserved.

Erithacus rubecula (Robin). Very common, and as popular here as elsewhere.

Daulias lusciniæ (Nightingale). An abundant summer visitor. Found in every copse on the east side of the Island, arriving with great regularity about April 10th. I often hear their alarm—a deep churring note—in late summer, but never later than August. When they first arrive I have heard half a dozen birds singing in a copse not an acre in extent, but they soon scatter off to their breeding stations. They come back to the same spot to nest year after year unless disturbed.

Sylvia cinerea (Whitethroat, Nettlecreeper). Common everywhere throughout the summer, arriving in the middle of April. I have seen odd specimens in October when shooting, the 6th the latest date.

S. curruca (Lesser Whitethroat). Not common in the Isle of Wight, but I have found the nest occasionally. Though the song of the lesser whitethroat largely resembles that of the common whitethroat, its call-note is very distinct, and in its drawling iteration reminds one of a bunting.

S. atricapilla (Blackcap). Not uncommon in the Island, but hardly abundant. I find the nest in the copses, but am always pleased when the clutch of eggs is of the salmon-coloured type, which is not common here. It is quite impossible to identify some clutches of the eggs of this species as distinct from those of the garden warbler; and he must be a good observer, and one with a good ear, that can state off-hand which of these birds he is listening to when in song.

S. hortensis (Garden Warbler). Far less common than the preceding—indeed scarce on the east side of the Island; a nest that I found here this year (1908) is the first I have seen. The west side of the Island is better suited to the requirements of this bird.

NEST OF ROBIN CONTAINING 5 EGGS AND 2 EGGS OF CUCKOO :
photographed near Shanklin.



H. F. Poole, photo. Natural size of eggs.

Melizophilus undatus (Dartford Warbler). Rare in the Island. It may be expected in the large stretches of gorse which clothe so many of our downs. I have seen it near Ventnor for the last two years, and have no doubt it breeds in the Island; fortunately the nest is very hard to find. This hardy little bird stays with us throughout the year.

Regulus cristatus (Golden-crested Wren, Goldcrest). I think this may be fairly called an abundant bird with us throughout the year. The nest may be expected wherever there are any considerable number of spruce firs, and through the winter this lovely and friendly little bird is to be found working the bare hedges, creeping in and out, and examining every twig. It is the tamest bird I know, and will allow you to stand and watch it from a yard off without showing the least fear.

R. ignicapillus (Firecrest). This bird was obtained at Freshwater in 1857, but I know nothing of it as an Island bird.

Phylloscopus rufus (Chiffchaff). An abundant summer visitor, arriving in March, often by the middle of the month, and even a few days earlier. Sometimes in April I have seen the bushes on Pan Common alive with chiffchaffs and willow wrens, no doubt just arrived. The nest is worth finding in its dainty concealment, always a foot or two from the ground, and never on it. The willow wren, on the contrary, would seem always to build as near the ground as possible, if not on it: one wonders which artifice pays the builder best? I cannot agree with Gilbert White in calling the note of the chiffchaff a "harsh loud chirp"; though possibly wearisome to some in its constant iteration, it is always soft and clear, and no note more welcome on a bright March morning, when the bare copses are showing, at the first glance at least, but little promise of the spring this tiny bird so clearly and resonantly presages. The chiffchaff is known to remain here occasionally through the winter: Mr. Wadham saw one near Carisbrooke in January, 1905.

P. trochilus (Willow Warbler, Willow Wren). This delightful little bird positively swarms in our copses throughout the spring, arriving quite at the beginning of April. Its short song is altogether charming as it gently runs down the scale, and I know no sound in nature more softly plaintive than its alarm-note when you are near its nest. The nest is cleverly concealed, often outside a wood or in a hedge-side, placed in some unconsidered tuft of grass on almost bare ground.

P. sibilatrix (Wood Warbler, Wood Wren). No doubt a summer visitor to the Island, but I have never seen or heard it on the east side, though I could not miss the song as I know it in Warwickshire woods. More speaks of it as frequenting fir plantations. I should consider it a bird particularly attached to deciduous trees, from the top of one of which it sings, making its nest among the fallen leaves and herbage at its foot.

Acrocephalus streperus (Reed Warbler). Very local, being of

course only found where there are sufficient reeds to cover a fair area. I see and hear it near Brading every year. It undoubtedly breeds in the reed-beds there, old nests being found when the reeds are cut. Mr. Wadham reports a few nests each year at Westmill and Carisbrooke Ponds.

A. aquaticus (Aquatic Warbler). An accidental visitor. One was obtained at St. Catherine's Lighthouse on October 18th, 1905.—Kelsall & Munn.

A. phragmitis (Sedge Warbler, Sedge-bird). Very abundant in the Island, and staying with us till late; I see it among the clover as long as any remains uncut, and still odd specimens well into October. It is among our later arrivals in the spring. By far the merriest and most noisy of our warblers, singing night and day throughout the summer; the constantly-repeated notes of the sparrow and swallow are most noticeable in its hurried song. The eggs vary but little in the many clutches I see.

Hypolais icterina (Icterine Warbler). One obtained at St. Catherine's Lighthouse, October 18th, 1905.

Locustella naevia (Grasshopper Warbler). A summer visitor, never abundant. I know of nests taken on this, the east side of the Island, and there are many marshy situations, with very thick herbage, eminently suited to its habits. The instance noted by Bury of a nest found half-way down the Culver Cliff, and composed of seaweed and lichens, is certainly most extraordinary.* I see the bird occasionally when walking the clover-fields in close line for partridges in early September, when it is sometimes forced to fly a few yards.

Accentor modularis (Hedge Sparrow). Always abundant, always welcome, this modest brown bird is found in every garden, and its neat nest and eggs of a charming blue never fail to give one pleasure however often found. Its song hardly gains the consideration it deserves.

FAMILY—PANURIDAE

Panurus biarmicus (Bearded Titmouse). I know nothing of this bird as belonging to the Island, but specimens are recorded by Bury and Butler as having been obtained near Ryde and Yarmouth respectively.

FAMILY—PARIDAE

Acredula rosea (Long-tailed Tit, Bottle Tit). Always a common species in the Island. I know of certain localities where a pair

* Since writing the above note, Mr. Poole has called my attention to the fact that Mr. Bury appears to have concluded that the nest he considered to be that of the grasshopper warbler was really that of a rock-pipit, with abnormally coloured eggs. This is reported by A. G. More in Venables' "Guide to the Isle of Wight," and did not come under the notice of Messrs. Kelsall & Munn, who report Mr. Bury's original statement in their admirable book.

breed year after year. I never fail to see a family party or two flitting silently through the woods when I am out cover shooting.

Parus major (Great Tit, Black-cap, Ox-eye). A common resident, always in evidence. Equally bold in bearing and colouring, it works our gardens with great regularity. It has a great variety of call-notes, and is in many respects the most interesting of our tits.

P. britannicus (Coal Tit). Not uncommon in the Island; there are always a few among the flocks of tits one comes across in the woods in winter.

P. palustris (Marsh Tit). Less common here than the other tits, though of frequent occurrence, more particularly in the middle of the Island. We hardly ever see it on this side in our gardens, but it may generally be found in company with the long-tailed tits in the woods.

P. coeruleus (Blue Tit, Tom Tit). Very plentiful everywhere. A bad gardener at some times of the year, but it surely makes up for this when feeding its numerous family, to which it makes hundreds of visits in the day, and each visit means some small caterpillar the less.

P. cristatus (Crested Tit). A specimen was killed near Yarmouth by a Mr. Butler, as recorded by Bury, and is still to be seen in Mr. Butler's collection.

FAMILY—TROGLODYTIDAE

Troglodytes parvulus (Wren, Jenny Wren, Cutty Wren). Abundant everywhere. A merry, bright little bird, always on the move, and with a marvellous power of song for its size.

FAMILY—MOTACILLIDAE

Motacilla alba (White Wagtail). A rare bird in the Island, or overlooked. More records that a pair were obtained, with their nest, at Freshwater by a Mr. Rogers, about 1865. I know nothing of the bird.

M. lugubris (Pied Wagtail, Water Wagtail, Dishwasher). Common always everywhere. I see flocks in the autumn, generally small, but occasionally containing some hundreds. This wagtail works the seashore with great regularity in autumn, getting a feast of flies from among the seaweed near high-water mark.

M. melanope (Grey Wagtail). Kelsall and Munn consider this a "local resident." I can only say I never saw the bird in the Island in the breeding season, nor is it common in winter, though appearing sparingly in suitable localities.

M. flava (Blue-headed Yellow Wagtail). An occasional summer visitor. One was captured at Carisbrooke on August 30th, 1906 (Wadham).

M. raii (Yellow Wagtail). This bird comes to us in April, individuals remaining till well into October. I don't consider it common in the Island, but it may always be found along the marshes in summer.

Anthus pratensis (Meadow Pipit, Tit-lark). Very abundant throughout the year, appearing in large flocks in the winter; the fields sometimes seem to be alive with them.

A. trivialis (Tree Pipit). This bird appears in April, but is far from common in the Island.

A. spioledda (Water Pipit). A specimen recorded by F. Bond, killed at Freshwater in 1865.

A. obscurus (Rock Pipit). Found throughout the Island all the year. It is common on our east coast, frequenting the broken ground along the shore so well suited to its habits, and occurs also at Freshwater. I find the nest frequently.

FAMILY—ORIOLIDAE

Oriolus galbula (Golden Oriole). A summer visitor; very rare; specimens have been obtained in 1845 and 1883 at Freshwater. A female, in a dying condition, was picked up by Mr. Poole, Shanklin, May 3rd, 1899.

FAMILY—LANIIDAE

Lanius excubitor (Great Grey Shrike). Occasionally seen in the Island in winter; always rare. A specimen was secured at Newport in 1887 (Hadfield), and a male, one of a pair, was shot on Yarmouth Common in 1841 (Bury).

L. collurio (Red-backed Shrike, Butcher Bird). This bird comes to us rather late, and is not uncommon in the Island. I consider it an increasing species. Though I have examined many clutches of eggs, I have not yet met with the red-spotted form here.

L. pomeranus (Woodchat). A rare summer visitor. Mr. Bond obtained the nest and eggs at Freshwater in 1856.

FAMILY—AMPELIDAE

Ampelis garrulus (Waxwing). Occasionally seen in winter, in severe weather especially. A pair procured at Freshwater in April, 1883, in summer plumage (Hadfield). Dr. Cowper saw a flock of five at Shanklin, 1894-5.

FAMILY—MUSCICAPIDAE

Muscicapa grisola (Spotted Flycatcher). Abundant in summer. A pair to be found in most gardens. I never saw it before May. I found the nest, with fresh eggs, on August 10th.

M. atricapilla (Pied Flycatcher). A very uncommon bird, but has been recorded several times in the Island. Mr. Harry Richards saw one in his garden at Westridge in May, 1905, and two were seen in Sanders's Garden, Carisbrooke, in the spring of 1907. I never heard of its breeding with us.

FAMILY—HIRUNDINIDAE

Hirundo rustica (Swallow). Fortunately still a common bird with us, though far more plentiful some years than others. Swallows certainly reach the Island early, though the bulk do not appear till mid-April, or even later; I have records of their appearance, single birds, as early as March 20th. In an average year a certain number remain with us till mid-November, but there are records of their stay till December 23rd. I saw a pure-white specimen flying about Morton Marsh for two days in 1906.

Chelidon urbana (Martin). Always a little later in appearing than the swallow, and not so numerous at any time on the east side of the Island. They nest freely in our cliffs, both in the sand and chalk. I saw many nests at the Culvers (1906). I never saw martins at any very late date, though small parties may be seen well into November; I have a note of a fair-sized flock at St. Helens on November 18th, 1906, but saw none after then.

Cotile riparia (Sand Martin). The sand martin is fairly abundant in the Isle of Wight. I have seen individual specimens in the first half of March, but the main supply do not appear till nearer the middle of April. There are few large breeding-colonies in the Island, as compared with some I know on the mainland.

FAMILY—CERTHIIDAE

Certhia familiaris (Tree Creeper). A resident, and probably not uncommon, but so silent and secretive a little bird is apt to escape notice. An early breeder here; I have found the nest in April with eggs hard set.

FAMILY—FRINGILLIDAE

Carduelis elegans (Goldfinch). Since the "Wild Birds Protection Act" came into force, goldfinches have increased rapidly in the Island. The bird-trappers now do not ply their trade as actively as they used to do, which may well account for their increase. In autumn and winter goldfinches are more in evidence, but they also breed here freely. In 1905 I saw three nests in one acre of garden and orchard. I think the small flocks seen in the winter among the thistles are generally home-bred birds. A pair have bred close to my garden (Sandown) for the last two years.

Chrysomitris spinus (Siskin). A few in winter, but not a common bird with us. Some years ago I saw a flock of perhaps twenty feeding among ornamental conifers at Shanklin. Mr. Wadham tells me he sees them rather frequently round Newport, frequenting the alder trees in winter. Along the Lukely Brook and on the upper reaches of the Medina are favoured localities.

Ligurinus chloris (Green Linnet, Greenfinch). Common everywhere and always; a resident.

Coccothraustes vulgaris (Hawfinch). A winter visitor only with us, generally in pairs or as single birds. I have seen the bird several times in Sandown gardens, and think the species increases.

Passer domesticus (House Sparrow). Far too common everywhere. A pest to Island farmers, but no doubt useful in the breeding season, largely feeding its young on grubs; I have also seen it clearing rose-shoots of aphids in a most systematic manner. I often see pied specimens in the big flocks in autumn and winter.

P. montanus (Tree Sparrow). I never saw this bird in the Island till two years ago; since then I have noticed individuals among flocks of the house sparrow and other finches round the stacks, always in winter. It must be considered a scarce bird with us, perhaps increasing.

Fringilla caelebs (Chaffinch). Next to the house sparrow and starling, perhaps our commonest bird, and one of the handsomest and most friendly. I share Charles Waterton's admiration for the chaffinch and all its ways. The nest is always a thing of beauty. I have a clutch of spotless eggs, and another clutch so like those of the bullfinch as to be indistinguishable.

F. montifringilla (Brambling). A winter visitor, certainly rare in the Isle of Wight. More frequent in our few hard winters.

Linota cannabina (Linnet). Very abundant everywhere, and a delightful, cheery little bird always. There are sometimes vast flocks in our stubble-fields in winter. I saw a pure-white specimen in one such flock at Alverstone in 1905. Every patch of gorse produces a nest or two.

L. rufescens (Lesser Redpoll). I should consider this only a winter visitor to the Island, and certainly uncommon on the east side. Bury records a nest taken at Shanklin Chine in 1843. Mr. Wadham finds it less uncommon in the centre of the Island during the winter months.*

L. flavirostris (Twite). Reported by Bury as seen on Freshwater Down; quite unknown to me as an Island bird.

Pyrrhula europaea (Bullfinch). An increasing species in the Island, always to be heard or seen in our copses; a resident.

Loxia curvirostra (Crossbill). A rare bird with us, and most

* I can find no record of the Mealy Redpoll for the Island, but it may well have escaped observation.

uncertain in its time of appearance. Dr. Cowper says it occurs in winter, and it is recorded from Bembridge and Freshwater in summer, many years ago. For several years past a small flock, perhaps a dozen birds, have appeared late in July in my own garden at Sandown; they stay for about a day, working steadily through the pine-cones on the two or three trees there. My attention was first called to them by their note, a new one to me at the time.

L. bifasciata (Two-barred Crossbill). Two specimens procured at Yarmouth in 1838 are recorded by Mr. Butler, and supposed to have been of this species.

Emberiza miliaria (Corn Bunting, Common Bunting). Found in the Island throughout the year. I don't see or hear it as often as I used to do, and think it decreases here. A late breeder: I found a nest, with five eggs, on July 17th, 1900.

E. citrinella (Yellow Hammer). Abundant everywhere throughout the Island, and at all seasons; a somewhat late breeder. It is a moot question how many eggs the yellow hammer usually lays. I think here clutches of three and of four eggs are about equally frequent.

E. cirrus (Cirl Bunting). Resident throughout the Island. Though working the Bembridge district with some regularity yearly, I cannot say I consider it "one of the commonest hedge birds" there, as reported by Mr. A. G. More in 1860; it is always to be found round Whitecliff Bay, but wants looking for. It is absurd to compare it, at any time or anywhere, as regards numbers, with the yellow hammer, which is one of our commonest birds. I see odd specimens, while shooting, through the autumn and winter, often with the flocks of finches round corn-stacks.

E. schoeniclus (Reed Bunting, Reed Sparrow, Black-headed Bunting). A resident, generally distributed, never abundant, throughout the Island. I see the bird much more frequently in the breeding season than during the winter months. I found a cuckoo's egg—the smallest specimen I ever saw—in a nest of this species many years ago.

Plectrophanes nivalis (Snow Bunting). Occasionally seen in winter. One stayed about the golf links at St. Helens for some days from December 1st, 1906; it was about half white in plumage, and very tame.

FAMILY—STURNIDAE

Sturnus vulgaris (Starling). Whatever may have been the case in earlier years, there is no doubt of the abundance of the starling nowadays: in every part, at all seasons, under every condition, it positively swarms in the Island. The purple-necked variety is the more common, but many of the green-necked may also be seen. It is a nuisance to small-fruit growers, but of great value to our pasture

lands throughout the year, working every inch of the ground for wire-worms and leather-jackets.

Pastor roseus (Rose-coloured Pastor). An occasional spring and summer visitor. Records from Seaview in 1855 (More), Alum Bay, 1858 (More), and West Cowes, 1876 (Hadfield).

FAMILY—CORVIDAE

Pyrrhocorax graculus (Chough). A former resident in our cliffs, but long since extinct in the Island, though Hadfield records that choughs were twice seen at Freshwater in 1883. My Father knew this as an Island bird about the year 1835, when it bred at Freshwater and the Culver Cliffs.

Garrulus glandarius (Jay). A common bird with us always throughout the Island, despite constant, and doubtless necessary, persecution from gamekeepers. I never fail to see jays when shooting in the covers. I took a clutch of six eggs from a spruce fir in 1907, not six feet from the ground.

Pica rustica (Magpie). By no means uncommon in the Island, but owing to its very obvious nest, gamekeepers destroy large numbers in the breeding season; he must be a very slack keeper who allows a brood to be brought off safely in the area of his preserves. There are small pockets in the downs, and isolated copses where the birds bring off their young safely still, and it is far from being exterminated yet awhile. A curiously prolific bird for one of the crow genus: I have found eight eggs in a nest, and six is about an average clutch. Mr. Wadham had an egg, taken in the Island, blue and without spots.

Corvus monedula (Jackdaw). Common everywhere, breeding in our cliffs in great and increasing numbers, and herding with the rooks during the winter months.

C. corone (Carrion Crow). A constant resident. I know no district on the mainland where the crow is as abundant as it is in the Island. I never see it in large flocks, a dozen being about the limit, but there are scattered pairs everywhere, nor do they decrease. I took a clutch of five eggs in Borthwood Copse in 1903, one egg being pale blue and spotless.

C. cornix (Hooded Crow). By no means a common bird in the Island, and only seen in the winter, when I have noted odd specimens along the coast.

C. frugilegus (Rook). Very abundant all the year throughout the Island, and certainly increasing; there are small rookeries now wherever a few high elms form a suitable breeding-place.

C. corax (Raven). I am afraid the ravens in the Island are now reduced to one pair, which still breed in the cliffs at Freshwater. Another pair bred at the Culver Cliffs with great regularity till 1904, but were no longer there in 1906, and I fear they have permanently left the locality. A fort has been built close to the point of the

Culvers, and I think the constant incidental disturbance finally drove the birds away. The eggs and young were frequently taken, but this did not seem to discourage the old birds. I have seen the parents and newly-fledged young there on more than one occasion. I know several clutches of eggs taken from the Culvers, varying very much in shape and colour. Is not this curious when these were, presumably, laid by the same pair of birds?

FAMILY—ALAUDIDAE

Alauda arvensis (Skylark). Abundant everywhere in the Island, and at all times of the year. No doubt many strangers come to us in the winter; at times I have seen them in countless numbers in the stubbles. One of our earliest breeders, and sings with us in almost every month of the year.

A. arborea (Woodlark). I should call this a very rare bird in the Island; personally I never saw it or heard it. Mr. P. Wadham tells me that this bird was far from uncommon near Newport some twelve years ago: he knew a bird-trapper catch as many as fifteen in a day—which may account for their present scarcity.

ORDER—PICARAE

FAMILY—CYPSELIDAE

Cypselus apus (Swift). The swifts come to us usually early in May, but I have several times noted the bird here late in April: the bulk of them leave again in the latter part of August, but some stay into September, certainly till the middle of the month. Not so abundant here as in many parts of the mainland, but always well represented.

FAMILY—CAPRIMULGIDAE

Caprimulgus europaeus (Nightjar, Goatsucker, Fernowl). The nightjar arrives here in May; it is, as far as my observation goes, our latest spring migrant. It is plentiful in all localities suited to it, and I have found the eggs not unfrequently. It is particularly abundant on Pan Common, where I have seen five together chasing one another and playing on a warm June evening; the air resounds with their remarkable "purring" note during the breeding season, from dusk onward, in the above-mentioned spot.

FAMILY—PICIDAE

Dendrocopus major (Great Spotted Woodpecker). A very rare bird in the Island: I never heard of its breeding with us. Bury,

writing in the early forties, says, "it is now rare, but was less so once." There was a specimen in Mr. V. Willett's collection obtained in the Island in 1889. One was shot near Gurnard Bay about 1895.

D. minor (Lesser Spotted Woodpecker). A specimen is recorded by Wadham, shot at Swainston in 1893, and another was obtained by a keeper near Gurnard some years since. It is a very rare bird, evidently. I can hear of no other records.

Gecinus viridis (Green Woodpecker). This must be a very rare bird in the Island; I never saw or heard one, though there are parts well suited to it. Wadham reports one shot at Wootton some years since, and another shot at Swainston, November 28th, 1907.

Iynx torquilla (Wryneck, Cuckoo's Mate, Barley Bird). Wrynecks come to us in April; I generally hear their note before that of the cuckoo by a few days. I am afraid the bird becomes less plentiful with us; I certainly hear it now far less than I used to do, and its note is difficult to miss. I understand that it is more frequent round Freshwater, a district better suited to its habits, than on this side of the Island.

FAMILY—ALCEDINIDAE

Alcedo ispida (Kingfisher). A resident, by no means abundant, and much oftener seen in the autumn than at other times of the year, when it works the salt-water pools, especially about St. Helens mill-dam and Bembridge, where I see it frequently. I know several breeding localities on this, the east, side of the Island. Some years since a pair bred for several seasons in a small sand quarry on Pan Common, some distance from a stream.

FAMILY—CORACIIDAE

Coracias garrula (Roller). An accidental visitor; very rare. A specimen killed at Nunwell, Brading, in 1881, and another near Sandown in 1886.

FAMILY—MEROPIDAE

Merops apiaster (Bee-eater). More records an example killed at Headon Hill warren, Freshwater, in 1885.

FAMILY—UPUPIDAE

Upupa epops (Hoopoe). No doubt this very beautiful bird would stay with us and breed if it only got a chance, as suggested by many naturalists. There are many records from all parts of the Island, and the bird would seem to be rather more than an "accidental visitor." I saw one on Pan Common on May 4th, 1906; it was



H. F. Poole, photo. YOUNG CUCKOO WAITING TO BE FED.

very tame, and allowed me to approach within a few yards—indeed tameness would seem a constant trait in the character of this charming bird, and a specimen thus soon falls a victim to some wandering gunner.

FAMILY—CUCULIDAE

Cuculus canorus (Cuckoo). I don't consider that the cuckoo comes to the Island particularly early; I never heard or saw it in March, and the bulk of birds appear in the latter part of April. There is no doubt that they stay late with us, though Mr. Percy Stone's record of one in his garden at Sandown in 1902 on November 29th is about the latest. I have frequently seen cuckoos here well into October, usually in gardens, where no doubt caterpillars are generally to be found. It is an abundant bird in the Island everywhere: I once saw twelve in a flock sporting together at Landguard, Shanklin, in late April. It is particularly common on our downs, where it no doubt takes advantage—literally—of the meadow and rock pipits which breed there so freely.

Coccyzus americanus (Yellow-billed Cuckoo). A specimen of this very rare bird was picked up dead by Mr. Kent, Old Park, Ventnor, early in October, 1896, and was stuffed by Mr. Smith, of Newport.

ORDER—STRIGES

FAMILY—STRIGIDAE

Strix flammea (Barn Owl, White Owl). A not uncommon resident with us; I see it often when shooting the covers, and now and again hawking over the marsh land in full daylight. I know several breeding haunts on the east side of the Island. I am glad to say I never saw one here hung among other victims on a keeper's tree: indeed, I think our gamekeepers in the Island are as a whole a very enlightened body of men, who do not go in for that indiscriminate slaughter of owls and hawks that is responsible for the growing scarcity of many of our most interesting birds in this country. Kestrels, no doubt, suffer, but they are often shot hurriedly in mistake for their vicious cousin the sparrow hawk.

FAMILY—ASIONIDAE

Asio otus (Long-eared Owl). This bird remains with us all the year. It is certainly our commonest owl on the east side of the Island, and obtains in all the larger woods, where it breeds regularly. On December 5th, 1907, I had the pleasure of seeing a number of

these owls put out of a corner of stunted copse we were shooting. I reckoned there were fifteen or sixteen of them. Several pairs breed in the immediate vicinity of the wood in question, but I think it wiser not to particularise more fully. Sometimes a very early breeder: I have a record of the young leaving the nest in this same locality by March 19th.

A. brachyotus (Short-eared Owl). A winter visitor, of very irregular appearance, some years being not uncommon. I never heard of its breeding in the Island. I have put up five or six in a day's shooting, generally in the latter part of October.

Syrnium aluco (Tawny Owl). Very uncommon in the Island: I have heard of no breeding place, nor have I ever heard or seen the owl myself. That it occurs there is no doubt, but very rarely.

Nyctala tengmalmi (Tengmalm's Owl). One is said to have been procured at Freshwater in 1883, but Kelsall and Munn consider this a doubtful record.

Athene noctua (Little Owl). A specimen was procured in the Isle of Wight in September, 1883.

ORDER—ACCIPITRES

FAMILY—FALCONIDAE

Circus aeruginosus (Marsh Harrier). Rarely occurs with us, but specimens are recorded by Mr. F. Bond, in May or June, 1885, at Freshwater, by Mr. V. Willett in January, 1886, and Mr. Wadham, from Chillerton Down, April, 1891.

C. cyaneus (Hen Harrier). A winter visitor, very rare now, though no doubt at one time not uncommon, as mentioned by Bury in 1844. Wadham records a specimen killed on Westridge Down, February 7th, 1891.

C. cineraceus (Montagu's Harrier). A summer visitor; very rare. A nest recorded by Mr. Howard Saunders on a furze-covered down near Ventnor in 1875. Two were shot on Mersley Down in 1888, and Mr. Wadham records a male bird shot at Chale, April 30th, 1891.*

Buteo vulgaris (Buzzard). The buzzard is occasionally seen in the Island, generally in autumn and winter. There is no record of its breeding with us.

Archibuteo lagopus (Rough-legged Buzzard). A winter visitor; very rare with us. A specimen recorded from the Island by Mr. Jenyns, some time before 1835, and by Bury also in those early days. The most recent record of this species is of an immature male which

* The Harriers are very difficult to identify when merely seen on the wing. I have seen the birds once or twice in the autumn, but failed to be able to state definitely to which species they belonged.



Percy Wadham, photo.

ROUGH-LEGGED BUZZARD STRIKING LEVERET.

was trapped on Dukem Down, March 10, 1907. This specimen, as shown in the accompanying illustration, was mounted and photographed by Mr. Wadham.

Aquila chrysaetus (Golden Eagle). I fully agree with Kelsall and Munn that the specimens of this eagle procured in the Island may almost certainly be considered birds escaped from captivity. Bury's record of an eagle shot at Appuldurcombe, which he identified by the form and measurement of the beak—the only portion of the bird to which he had access—is no doubt interesting, but hardly conclusive. Still the records exist of one killed by Mr. J. Jolliffe on Westridge Down in September, 1872; and another at Wootton, near Ryde, in 1885.

Haliaetus albicilla (White-tailed Eagle). The eaglet taken from the Culver Cliffs in 1780, recorded by Warner in his "History of the Isle of Wight," is presumed to have been of this species, and Mr. V. Willett has information of another killed on St. Catherine's Down.

Astur palumbarius (Goshawk). The pair of large hawks seen by Mr. Attwood on the Shanklin Downs, in 1896, and attributed by him to this species, form an interesting record for the Island of a very rare bird. I doubt, however, if a careful recorder would admit the bird to our list on this evidence alone.

Accipiter nisus (Sparrow Hawk). By no means uncommon in the Island, remaining all the year; nor do I think it decreases in numbers. Of course it figures largely on the keeper's tree; but if any bird ought to be there, it is this one. I see sparrow hawks often when shooting, but they are very clever in avoiding the guns. They breed throughout the Island in our larger copses.

Milvus iclinus (Kite). A specimen is recorded by Hadfield as from the Island in September, 1876.

Pernis apivorus (Honey Buzzard). An occasional autumn and winter visitor. I remember the bird shot at Sandown, mentioned by Kelsall and Munn, on October 7th, 1878, by the Rev. H. Jacob, which I saw in the flesh. One was shot near Grange, Alverstone, by Mr. B. B. Beckingsale in September, 1907. The bird had been sent to the taxidermist before I could see it.

Falco peregrinus (Peregrine Falcon). I fear that one of our two breeding pairs of peregrines, until lately, despite endless persecution, nesting at the Culver Cliff, has been finally driven away by the building of the fort just above its old eyrie. I have watched the birds there through many years, and know several clutches of eggs procured there only a few years back—indeed the falcons were rarely allowed to bring off their brood. I have failed to find the birds there in the springs of 1906 and 1907, and think they have finally disappeared. Bury's records go to prove that there were other eyries in the Island early in the century—near Dunnose, at Blackgang, and possibly Chale Bay. A pair still breed at Freshwater, but, despite all our local laws, I fear the nest is always disturbed.

A clutch of eggs, taken for my Father, some time in the thirties, and still in my possession, came from there.*

F. subbuteo (Hobby). This bird is seen occasionally in the Island, generally in autumn and winter. I can find no record of its breeding with us. Mr. Wadham sends me a record of one killed, May 29th, 1898, at Chale. One was shot by Mr. Lee White in September, 1907, near Kingston, and preserved. It is a fine specimen, in good plumage.†

F. aesalon (Merlin). Merely a visitor with us, and not often seen. I have heard of examples obtained here, generally in late autumn. No record of its breeding with us.

Tinnunculus alaudarius (Kestrel, Windhover). Our commonest hawk, to be seen everywhere, and at all times of the year. Particularly plentiful round our coast, breeding freely in the cliffs. These provide such admirable nesting sites that the kestrel rarely builds in trees with us; I never knew an example, though no doubt many such occur. A beautiful and generally useful bird, deserving all protection, though it may harry young game occasionally.‡

T. cenchris (Lesser Kestrel). Mr. V. Willett, of Whitwell, had in his collection a specimen shot at Carisbrooke in November, 1895 ("Birds of Hampshire," Kelsall and Munn), and a specimen was picked up dead near Shorwell, April 11th, 1903. This is a very rare bird, and we may well be proud of two authentic instances of its occurrence in the Island.

Pandion haliaetus (Osprey). No doubt this grand bird has been occasionally seen in the Island, but I should consider it very rare. The examples quoted by More as being seen near Bembridge in 1856 and 1859 were doubtless migrants, the dates being May and September, these being the approximate spring and autumn dates when the bird might be expected to appear.

* Since writing the above notes, three Peregrines have been observed at the Culvers by Mr. Woods, Sandown, and Mr. Poole, Shanklin. They were seen in August, 1908, several times, and consisted of two old birds and one young. Under the portion of the cliff which they frequented there were many carcasses of birds partially eaten: the greater number of these were pigeons—presumably for the most part stock-doves, which breed so freely there, but several had rings on their legs. We have many pigeon-fanciers now in the Island, and no doubt many a weary "Homer" would make the Culver point his first resting-place on a long flight from the east, and would fall an easy victim to "our friend the enemy." I hope the fact that the falcons were seen here again may mean that they had bred once more at the ancient eyrie: I can only say that I failed to see any signs of them when there several times in the spring.

† Since writing these notes I have heard of another Hobby, picked up wounded, but in fine condition, near Whiteley Bank, and brought to Mr. Poole, Shanklin, May 25th, 1908.

‡ I call the Kestrel a hawk, that being its popular name: of course it is really a falcon, and deserves the more dignified appellation.



Percy Wadham, photo.

PEREGRINE STOOPING ON A PHEASANT.
(From mounted Island specimens.)

ORDER—STEGANOPODES

FAMILY—PELECANIDAE

Phalacrocorax carbo (Cormorant, Isle of Wight Parson). Quite a common bird with us throughout the year, and nesting on our main headlands; we have a fine and thriving colony at the Culvers always. I think they tend to increase with us.

P. graculus (Green Cormorant, Shag). Not uncommon on the east side of the Island; they undoubtedly breed at the Culvers, and also at Freshwater. I have eggs taken by my Father at the latter place seventy years ago.

Sula bassana (Gannet). An occasional winter visitor on our coasts, sometimes driven inland by stress of weather. The one obtained near Sandown, now in the possession of Dr. Cowper, is a very fine specimen in adult plumage.

ORDER—HERODIONES

FAMILY—ARDEIDAE

Ardea cinerea (Heron, Jack Heron, Hern). Constantly to be seen along our marsh lands throughout the year; I once saw as many as twenty, in September, flying over Whitefield Woods: many of them pitched on the tree-tops. Generally to be seen singly or in pairs. It is reported by Bury to have bred at Grove, near Yarbridge, many years ago, and there are still some fine Scotch firs there very suitable for the heron's requirements. They have undoubtedly built in Parkhurst Forest, young having been obtained from a nest in 1888.

A. purpurea (Purple Heron). A specimen of this very rare bird was shot at Alverstone in 1890, and was stuffed by Mr. F. Smith, at that time a taxidermist in Newport; it came into the possession of Mr. V. Willett, Whitwell (Kelsall and Munn).

A. ralloides (Squacco Heron). A specimen was shot at St. Helens on May 19th, 1858.

Ardetta minuta (Little Bittern). A very rare summer visitor. It is reported by Bury, on the authority of Mr. Butler, as having been obtained in the Island, and Mr. V. Willett has a record of one shot at Blackgang in 1897 (Kelsall and Munn).

Botaurus stellaris (Bittern). Rarely obtained in the Island, though several examples have occurred in the winter months, one being procured as late as 1903 at Brook.

FAMILY—CICONIIDAE

Ciconia alba (White Stork). Merely an accidental visitor. One shot at and wounded at Atherfield in April, 1902, and afterwards

secured at Shorwell. This specimen was mounted by Mr. Wadham and photographed by Mr. Poole, and is here reproduced.

FAMILY—PLATALEIDAE

Platalea leucorodia (Spoonbill). One reported by More in Venables' "Isle of Wight" as having been shot near Yarmouth in 1845.

Plegadis falcinellus (Glossy Ibis). A specimen of this bird was shot by Mr. Meade, Sir J. Thornycroft's keeper, Oct. 6th, 1908, on the reclaimed land, close to St. Helens station. It is immature but in good plumage, and has been well set up.

ORDER—ANSERES

FAMILY—ANATIDAE

Anser cinereus (Grey Lag Goose). Hadfield records one procured out of a flock of twelve off Bonchurch in 1888 (Kelsall and Munn).

A. segetum (Bean Goose). Occasionally procured here in severe winters. The specimen recorded by Dr. Cowper, shot in Sandown Marshes in the winter of 1892-93, I saw in the flesh, taking an accurate drawing of its head.

A. albifrons (White-fronted Goose). This goose is also obtained in the Island in cold weather, and I should say more commonly than the last. Several passed through my hands in the winter of 1892-93, which were shot on the Sandown Marshes.

Bernicla brenta (Brent Goose). Always to be found in cold weather round our coasts; I have seen large flocks off Bembridge. They are obtainable occasionally in our marshes, but more commonly on the sea. This is our commonest goose.

B. leucopsis (Barnacle Goose). Specimens of this handsome little goose are obtained now and again on our coast in severe weather, but I consider it rare. More records it from Freshwater Bay in 1858.

Cygnus olor (Mute Swan). This species is abundant in the Island, especially on our east side, where they were introduced many years ago. They breed in many places through our marsh land. It is quite impossible to say whether or not some of those seen in winter are wild birds, but I cannot say I ever saw swans here that I considered other than semi-domesticated.

C. musicus (Whooper Swan). A winter visitor, which is occasionally obtained in the Island.

C. bewicki (Bewick's Swan). Occasionally obtained in winter: I know of two stuffed specimens, both obtained near Bembridge between 1870 and 1880.



H. F. Poole, photo.

WHITE STORK
(a rare visitor) captured at Shorwell in 1902.

Tadorna cornuta (Sheldrake). I should hardly consider this very handsome duck a "resident," though Kelsall records that Mr. H. Damant of Cowes saw a brood of young in the Newtown River in 1904; I should think this was a unique instance of the bird breeding with us: a pair at their breeding haunt are too conspicuous to escape notice.* Sheldrakes are to be seen not very unfrequently on our coasts in winter.

Mareca penelope (Widgeon). A regular, but not abundant, winter visitor: our shores are not well suited to its uses.

Dafla acuta (Pintail). An uncommon winter visitor.

Anas boscas (Wild Duck, Mallard). A resident; frequent on the east side of the Island throughout the year, where it breeds freely in all suitable localities. I have seen the nests and young broods for some miles up our marsh-land.

Chaulelasmus streperus (Gadwall). A decidedly rare winter visitor.

Querquedula circia (Garganey). Certainly very scarce here, but specimens are obtained occasionally. Kelsall and Munn speak of it as exclusively a spring and summer resident, but my Father bought a freshly-killed specimen in winter—about 1875—at the poulterer's in Sandown, which Smith of Newport afterwards stuffed for him. I was with my Father when he bought the duck in question.

Q. crecca (Teal). To be found throughout our marsh-land during the winter. I have seen teal several times also in the spring on the reclaimed land at Bembridge, and Mr. C. Orchard, of Bembridge, tells me some pairs breed there annually. This ground, owned by Sir John Thornycroft, is fortunately carefully preserved, and forms a most valuable breeding-ground for our marsh-loving birds.

Spatula clypeata (Shoveller). Very uncommon with us, but is occasionally procured in winter.

Fuligula cristata (Tufted Duck). Not very uncommon during winter in the Island, the specimens obtained being generally in immature plumage. I have no record of its breeding with us, though it has been seen well into the spring. It is one of the winter visitors to Sir J. Thornycroft's land, Bembridge.

F. marila (Scaup). To be found on our coasts in winter, particularly in severe weather.

F. ferina (Pochard, Dun Bird, Red-Head). A winter visitor; not common with us.

Clangula glaucion (Golden-eye). Obtained on our coasts, rarely inland, in the winter months, generally in immature plumage.

* Since writing the above, I have received information from Mr. Poole that a pair of sheldrakes have bred on the north side of the Island for several years, and have been seen there with the young brood. I am glad to be able to change my opinion as to the bird being resident with us, and hope it may increase.

Harelda glacialis (Long-tailed Duck). A decidedly rare winter visitor.

Somateria mollissima (Eider Duck). Very rare with us, but has been obtained in mid-winter.

Oedemia nigra (Scoter). Always to be seen on our coasts in winter, especially in severe and stormy weather. Our commonest sea-duck. I have seen it in comparatively large flocks.

Oe. fusca (Velvet Scoter). A very rare winter visitor.

Mergus merganser (Goosander). Occasionally obtained in the Island in winter. Bury records a fine male from Knighton in 1841-2, and Cowper a female near Sandford.

M. serrator (Red-breasted Merganser). To be found on our coasts in winter, especially if the weather is severe, when the bird is not uncommon on the east side of the Island; but I never saw a really fine male.

M. albellus (Smew). Bury records the smew as occasionally met with off the Isle of Wight. I know nothing of the bird, nor can I hear of any recent example.

ORDER—COLUMBAE

FAMILY—COLUMBIDAE

Columba palumbus (Ring Dove, Wood Pigeon). Always abundant with us; in late autumn large flocks come to our woods to clear off the acorns, &c., generally leaving us before Christmas. I have found the nest, with eggs, from early April till, and including, October. I have been able to distinguish the smaller foreign form in the late autumn quite clearly when compared with our home-bred birds.

C. oenas (Stock Dove). Rather a common species in the Island, certainly on the east side, where it breeds freely in all our cliffs, especially at the Culvers. I see small flocks in autumn and winter, often flying with the wood pigeons. I have shot stock doves several times when waiting for wood pigeons coming in to roost. I never found a nest in a hollow tree in the Island.

C. livia (Rock Dove). I fail to find authentic records of this bird for the Island, though it probably obtained here many years ago. I think it more than probable that the pigeons mentioned by Sir R. Worsley, in his "History of the Isle of Wight" (1781), as breeding freely at the Culvers, were stock doves, not rock pigeons. Dr. Cowper, of Shanklin, has seen genuine "blue rocks" about the cliffs near Luccombe, but these may, of course, have been tame birds reverting to their wild habits.

Turtur communis (Turtle Dove). The turtle dove arrives late with us, not till well into May as a rule; it comes at about the same



H. F. Poole, photo.

NEST AND EGGS OF WILD DUCK,
photographed near Sandown.

date as the goatsuckers, swifts, and flycatchers, and then the complement of our spring migrants is complete. A charming bird, of swift and powerful flight, it is a universal favourite. It is common everywhere, sometimes breeding in our gardens. I have seen it in flocks of perhaps thirty at a time in autumn here. I have never seen one later than mid-October.

ORDER—PTEROCLETES

FAMILY—PTEROCLIDAE

Syrrhaptes paradoxus (Pallas's Sand Grouse). A specimen of this bird was procured at Freshwater in 1888, one of the several years in which it has appeared in this country in some numbers.

ORDER—GALLINAE

FAMILY—PHASIANIDAE

Phasianus colchicus (Pheasant). The Island is particularly suited to the requirements of this handsome bird; there are wild-bred specimens in most of our copses, and it is freely hand-reared on the larger estates. As eggs are brought in from other districts, the many varieties procured are of no real local importance.

Caccabis rufa (Red-legged Partridge, French Partridge). A very rare bird with us; I never personally saw or heard of one. As Kelsall and Munn suggest, probably those procured lately were the produce of eggs introduced among those of the common partridge to increase our native stock. As but little partridge-driving can be indulged in in the Island, it is to be hoped, from a shooting point of view, that this bird will not gain a strong footing here: it is hardly possible to get it to rise to the gun when walking up partridges.

Perdix cinerea (Partridge). The partridge is an abundant bird with us, and may be found everywhere throughout the Island. Many Hungarian birds have been turned down in late years, but I cannot discover that this has produced any appreciable difference in the size or colour of the native stock.

Coturnix communis (Quail). Quails are occasionally seen, but it is a rare bird here. Bury records a nest at Newchurch, and says that bevvies have been fallen in with at Whitwell and near Ryde about 1844. I have seen three shot in the last fifteen years—two at Roud and one close to Whitefield Woods; in each case the birds were single. It has been procured in the Island in mid-winter.

ORDER—FULICARIAE

FAMILY—RALLIDAE

Rallus aquaticus (Water Rail). The water rail is not a common bird with us, but I have seen odd ones at all seasons of the year. More is quoted as having known of nests in the Island, and I have no doubt that it breeds on the reclaimed land at Bembridge, where I have seen it in May and June. Owing to its habit of skulking in thick herbage it is apt to escape observation. Mr. Wadham tells me he has seen as many as seven distinct water rail in a winter's afternoon at Carisbrooke, but does not see the birds there in summer.

Porzana maruetta (Spotted Crake). A spotted crake is occasionally obtained in the Island, generally in autumn and winter. I can get no record of its having bred with us. Mr. Wadham reports one captured at Carisbrooke on November 27th, 1906, and there are many earlier records.

Crex pratensis (Corn Crake, Land Rail, Rail). I have rarely heard, and never seen, a land rail in the Island in the summer. No doubt they obtain here, and breed occasionally, but by no means commonly. In the early autumn, on the contrary, they come to us freely, sometimes really in abundance, and many are killed during partridge shooting, especially out of standing clover. One day in mid-September, 1905, shooting at Rowlands, we killed thirty of these birds. No doubt some stay through the winter here. I caught one in a cave below the Culvers many years ago, about Christmas, in good condition—an odd place for the bird at any season. The bulk of the birds disappear in September. Mr. Wadham tells me that the land rail bred rather freely in the centre of the Island some fifteen years ago, many nests being cut out of the standing grass; now they are scarce.

Gallinula chloropus (Moor-hen, Water-hen). Very abundant everywhere; hardly a small pond without its pair. Of course our chain of marshes form its chief habitat.

Fulica atra (Coot). Plentiful on the east side of the Island in winter, especially on the reclaimed land at Bembridge. Here also it breeds freely and in increasing numbers. It may be obtained all through our marshes.

ORDER—ALECTORIDES

FAMILY—OTIDIDAE

Otis tetrax (Little Bustard). A merely accidental visitor. One was shot by H. Jacob and the Rev. H. M. Langdale near Arreton,

January 2nd, 1875, from a turnip field. I remember the occasion well, but did not see the bird till after it was stuffed.

ORDER—LIMICOLAE

FAMILY—OEDICNEMIDAE

Oedicnemus scolopax (Stone Curlew). As in the case of other records for the Island, I have only seen this bird in quite late autumn, a pair on Pan Common in November, 1904, and a single bird at Alverstone early in December. Bury records a nest at Wacklands in his time. Examples of the bird have been obtained in the Island, generally in the autumn and winter.

FAMILY—GLAREOLIDAE

Glareola pratincola (Collared Pratincole). Kelsall and Munn speak of a specimen that once passed through the hands of Mr. F. Smith of Newport, which was obtained in the Island. I can find no other mention of the bird.

FAMILY—CHARADRIIDAE

Charadrius pluvialis (Golden Plover). Not uncommon during the winter, though large flocks are unusual; small lots are often to be found among the green plover which are so abundant along our marsh lands. I have seen golden plover oftener here in March than in any other month.

Squatarola helvetica (Grey Plover). A decidedly uncommon bird here, occurring occasionally through the winter months.

Aegialitis curonica (Little Ringed Plover). A specimen shot by H. Rogers at Freshwater in 1864 is vouched for by Kelsall and Munn.

Ae. hiaticula (Ringed Plover, Ring Dotterel). To be found in suitable localities on our coast; rather abundant round Bembridge. It breeds with some freedom on the sandy tracts of the reclaimed land of Brading Harbour.

Eudromias morinellus (Dotterel). Certainly rare in the Island: odd specimens occur on our down-land during spring and autumn migration.

Vanellus vulgaris (Peewit, Green Plover, Lapwing). An abundant resident. If, as Kelsall and Munn suggest, it breeds more commonly on the mainland than with us, Hampshire is exceedingly fortunate, for it nests with us most freely. The reclaimed land of Brading Harbour forms an ideal breeding-ground, and as this is carefully protected the bird steadily increases there. It nests

freely on the uplands and marshes throughout the Island, and vast flocks may be seen in the winter months. Mrs. S. Davenport, Godshill Park, brought me an abnormal peewit's egg she found on Bowcombe Down, coloured in all respects like the egg of the ringed plover.

Streptilas interpres (Turnstone). A rare winter visitor to the Island.

Haemantopus ostralegus (Oyster Catcher). This very conspicuous bird appears sparingly on our coasts throughout the winter months. I have generally seen it singly or in pairs. I should almost call it a rarity on the east side of the Island. A pair of these birds were observed by Mr. Poole in May on the Newtown River: it is thus possible it may breed with us.

FAMILY—SCOLOPACIDAE

Himantopus candidus (Black-winged Stilt). A specimen is mentioned by Bury as having been killed near Yarmouth early in last century.

Phalaropus hyperboreus (Red-necked Phalarope). A specimen of this bird is reported to have been received by Mr. Smith of Newport in 1883.

P. fulicarius (Grey Phalarope). Occasionally seen in the Island in autumn, no doubt when on migration. Mr. C. Orchard of Bembridge has obtained both sexes of this bird on the reclaimed land there.

Scolopax rusticula (Woodcock). I should call this bird a winter visitor, though no doubt it occasionally breeds with us. A large number must be shot every year in the Island, bags of from six to a dozen being not unusual in a day's cover-shooting.* No doubt Parkhurst Forest, where large numbers are sometimes seen, is particularly suited to the woodcock's requirements, and it probably breeds there with some regularity. I have records of nests in several parts of the Island, but none very lately.

Gallinago major (Great Snipe). A winter visitor, very uncommon, but it may well be that it is sometimes shot among other snipe and not identified. Bury mentions specimens obtained about 1840.

G. coelestis (Common Snipe). A winter visitor to us now, whatever it may have been in the early days, when Bury wrote of it as breeding in the marshes at Yarmouth. It comes and goes with us throughout the winter, and I have seen odd specimens in almost every month of the year. In the first few days of hard weather it sometimes comes to our marshes in great numbers, but it soon

* Mr. Wadham has collected the following information as to the number of woodcock shot on various estates in the winter of 1906-7: Swainston, 68; Bowcombe Valley, 15; Medham, 9; Landguard, 3; Alverstone, 27; Haven Street, 45; Nunwell Park, 4; Osborne, 10.

moves on. I have seen a wisp of at least forty birds in a turnip field at Alverstone.

Limnocyptes gallinula (Jack Snipe). I should consider this an uncommon bird on this side of the Island, but it is occasionally obtained throughout the winter months. Mr. Wadham informs me that it is not uncommon round Carisbrooke during the winter.

Tringa alpina (Dunlin, Oxbird). A winter visitor, to be found on our coasts in small flocks till well into the spring. According to Kelsall and Munn there is some evidence of the birds breeding on the reclaimed land of Brading Harbour, well suited to many of the long-bills for nesting purposes. The fact that they have been seen here in summer plumage proves nothing. I have seen them with the black breast in districts where there had never been any question of their breeding.

T. minuta (Little Stint). The bird has been recorded from the Island by Mr. Rogers in 1865, but I consider it a great rarity.

T. temmincki (Temminck's Stint). Again reported by Mr. Rogers at the same date. I can hear nothing of the bird as belonging to the Island.

T. subarquata (Curlew Sandpiper). Occasionally seen and obtained in the Island while migrating in spring and autumn.

T. striata (Purple Sandpiper). An uncommon winter visitor. Mr. Wadham records a specimen obtained in the Island in October, 1896.

T. canutus (Knot). To be found in the winter months, but far from commonly, on our coasts.

Machetes pugnax (Ruff, Reeve—female). This bird is now a rarity in the Island, but has been obtained in the winter months. One is reported by Mr. Wadham in September, 1889.

Calidris arenaria (Sanderling). A winter visitor, by no means abundant in the Island. I have seen small parties occasionally at Bembridge.

Tringoides hypoleucus (Sandpiper, Summer Snipe). Not a common bird here, but I see it every spring in small numbers, and have no doubt that it breeds on the reclaimed land of Brading Harbour, where I have found it in May and June.

Helodromas ochropus (Green Sandpiper). This bird has been reported from the Island by Bury as having been obtained in spring, autumn, and winter, but the record of its building in Yarmouth Marshes, as mentioned by Yarrell, in 1837, is most interesting. Apparently the nest was not found, but broods of young, with their parents, were seen in August.

Totanus calidris (Redshank). A resident, but now, on the east side of the Island, far more abundant in the spring than the winter months. There is a thriving colony on the reclaimed land of Brading Harbour, which has increased much in late years; I should judge there must be fifty nests there each spring. It also breeds in the

marsh-land near Freshwater. It comes back to its breeding-ground in March.

T. canescens (Greenshank). A rare spring and autumn visitor to the Island, but rarely seen or obtained. Major Le Marchant tells me he remembers shooting this bird on Brading Harbour many years ago.

Limosa lapponica (Bar-tailed Godwit). This bird visits the Island occasionally in spring and autumn, but is far from common. One stayed about the marshes on the reclaimed land, Brading Harbour, for some days in September, 1898; it allowed me to approach within five yards on several occasions. Major Le Marchant recalls the bird as not very rare in old Brading Harbour.

Numenius phaeopus (Whimbrel). Occasionally obtained in spring and autumn, but far from commonly.

N. arquata (Curlew). Curlews may be seen flying overhead here in all months of the year. They do not breed with us, and I have rarely seen them except on the coast, and a certain distance up some of the creeks. I very often hear their note at night, and should judge, from the calls coming from many directions, that big flocks sometimes pass over.

ORDER—GAVIAE

FAMILY—LARIDAE

Sterna macrura (Arctic Tern). Occasionally found on our coasts in spring and autumn.

S. fluviatilis (Common Tern). More frequent than the last, but I cannot call any of the terns abundant in the Island at any season. This is the only one that I have been personally able to identify. I have generally seen it at Bembridge in the autumn.

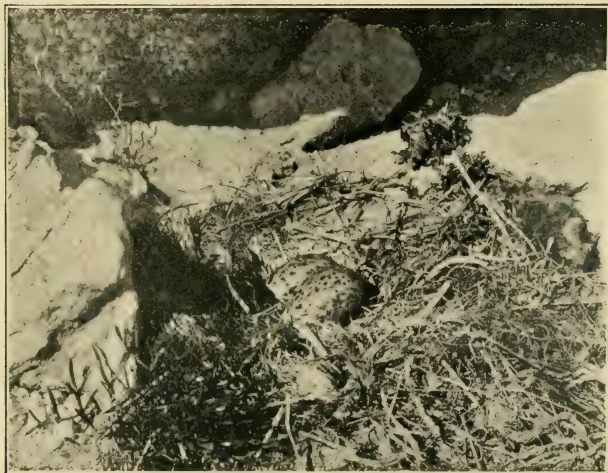
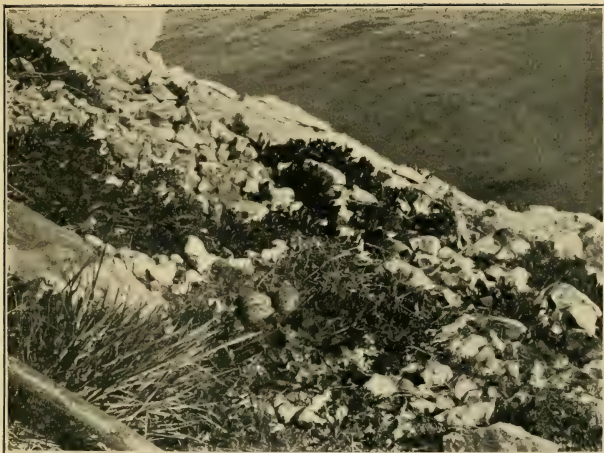
S. minuta (Little Tern). More speaks of a flock of little terns seen at Bembridge and one obtained at Freshwater in 1855.

S. cantiaca (Sandwich Tern). There are records of this tern being obtained in the Island, including one at Freshwater in the autumn of 1888.

Hydrochelidon nigra (Black Tern). Bury and More both speak of this bird having been obtained in the Island in the middle of last century.

Rissa tridactyla (Kittiwake). Not uncommon on our coasts in winter. It certainly used to breed somewhat freely at Freshwater, eggs in my Father's (Rev. W. D. Fox) collection being labelled as from there; they were probably taken about 1832, but there is no recent record of its occurrence there, nor do I know it as a bird frequenting the Culver Cliff.

Larus glaucus (Glaucous Gull). A rare occasional winter visitor, recorded by Bury in 1844. On January 13th, 1908, I was able to



H. F. Poole, photo. NEST AND EGGS OF HERRING GULLS:
photographed at the Culver Cliffs.

identify a glaucous gull on the shore in Sandown Bay. I twice got to within ten or twelve yards of the bird before he took to flight. It was feeding with herring and black-headed gulls, and the all-white plumage and curious flight were very distinctive. It was appreciably larger than the herring gulls, and they at once made way for it when it pitched among them. From the yellow-white colour, and darkish bill, I concluded it to be an immature specimen of this gull. Mr. G. Woods, Sandown, to whom I mentioned seeing the bird, went to the shore at once with some glasses, and was able to corroborate me in every particular. The bird was very tame, and could easily have been shot. It stayed in the district some time, and was seen by Dr. Cowper on Feb. 25th.

L. leucopterus (Iceland Gull). One recorded as shot at Freshwater in 1883.

L. argentatus (Herring Gull). Abundant with us throughout the year, breeding in some numbers at the Culvers and Freshwater. The colony at the Culvers, though now little molested, does not appear to increase. They are often caught young and kept tame in the gardens here.

L. fuscus (Lesser Black-backed Gull). Not at all common in the Island at any time of year, but most often seen in the winter. A pair or two certainly still breed at the Culvers; I have never failed to see the gulls there in the breeding season, but they don't increase.

L. canus (Common Gull). Abundant here throughout the autumn and winter months, some certainly staying throughout the year.

L. marinus (Greater Black-backed Gull). A rare winter visitor with us. I see it occasionally off Bembridge, especially in hard weather.

L. ridibundus (Black-headed Gull). Our commonest gull, to be found on our coast and marshes in autumn, winter, and spring; I have seen odd specimens, in full breeding plumage, throughout the summer. Vast flocks collect on the marshes sometimes when they are flooded.

L. minutus (Little Gull). This bird is mentioned by More as found in the Island. Mr. V. Willett obtained a specimen killed by flying against the glass at St. Catherine's Lighthouse in 1894, and Dr. Cowper records one seen at Shanklin with other gulls.

Stercorarius catarrhactes (Common Skua). A specimen recorded by More from Freshwater about 1860.

S. pomatorhinus (Pomatorhine Skua). Bury identified a specimen of this bird obtained in the Island by Butler in 1844.

S. crepidatus (Richardson's Skua). It would seem that this bird was to be found in the Solent not unfrequently in Bury's day, and it is recorded by More in 1856, and by Mr. V. Willett at a later date.

S. parasiticus (Buffon's Skua). Mr. Wadham has the skin of a female Buffon's Skua obtained on the Medina River, Feb. 20, 1899.

ORDER—TUBINARES

FAMILY—PROCELLARIIDAE

Procellaria pelagica (Storm Petrel). Specimens of the storm petrel have been obtained from St. Catherine's Lighthouse, but it is just a chance visitor brought by stress of weather. I have a record of one from St. Catherine's Lighthouse, on October 29th, 1908, from Mr. Percy Wadham.

P. leucorrhoa (Leach's Petrel). That well-known collector, the St. Catherine's Lighthouse, is again to be credited with a specimen of this bird, killed there on April 23rd, 1894, in foggy weather. One was picked up on the shore at Freshwater in 1857, recorded by More.

Oceanites oceanicus (Wilson's Petrel). Two specimens, picked up near Freshwater, one in 1863 and another in 1888.

Puffinus anglorum (Manx Shearwater). Twice obtained in the Island, one at Yarmouth in 1836 (Bury) and the other at the Needles in 1867 (Hadfield).

Fulmarus glacialis (Fulmar Petrel). Kelsall and Munn give an instance of a fulmar petrel obtained off the Island in 1876.

ORDER—PYGOPODES

FAMILY—COLYMBIDAE

Colymbus glacialis (Great Northern Diver). A winter visitor, not uncommon off our shores, but I never knew of an adult specimen obtained here. I have seen the bird all through the winter months.

C. arcticus (Black-throated Diver). I consider this bird uncommon in—or rather off—the Island, but it is still occasionally obtained. I know one stuffed specimen procured at Bembridge.

C. septentrionalis (Red-throated Diver). A not uncommon winter visitor, often to be seen in Sandown Bay and off Bembridge. Those obtained are generally immature specimens.

FAMILY—PODICIPIDAE

Podiceps cristatus (Great Crested Grebe). A winter visitor with us, and certainly uncommon. I have seen it in Bembridge Harbour, and it has been obtained now and again. We have few localities suitable to its breeding habits. Specimens of this and the three following species of grebe came into Mr. Wadham's possession, all in the winter of 1899, and all procured on the north side of the Island.

P. griseigena (Red-necked Grebe). No doubt occasionally seen, and even obtained, off the Island; but a rare bird with us, and of course only to be expected in winter.

P. auritus (Sclavonian Grebe). A winter visitor to our coasts; not common. One was obtained near here (Sandown) in 1895.

P. nigricollis (Eared Grebe). One of these birds is recorded by More as having been obtained off Seaview in December, 1858.

Tachybaptus fluviatilis (Little Grebe, Dabchick). I see dabchicks regularly on the reclaimed land at Bembridge, and have no doubt that a few breed there. It is not, however, a common bird with us. Mr. Wadham informs me that it may be seen occasionally every winter at the mill-dams at Carisbrooke.

FAMILY—ALCIDAE

Alca torda (Razor-bill). Found commonly round our coasts throughout the year. It breeds freely at Freshwater, and in small numbers at the Culver Cliff.

Lomvia troile (Guillemot). Great numbers of these birds are to be seen on our eastern coasts in winter, and there is a colony that breeds at the Culver Cliff; but Freshwater is their main habitat, where they breed in considerable numbers.

L. bruennichi (Brünnich's Guillemot). A specimen is mentioned by More as having been obtained by Mr. Rogers at Freshwater in 1860, but the record seems very doubtful.

Uria grylle (Black Guillemot). The black guillemot is recorded as having been shot off Yarmouth about 1854 (More), and another example is recorded by Hadfield near Freshwater in 1888.

Mergulus alle (Little Auk). I remember many years ago finding examples of the little auk on the shore towards the Culvers on several occasions, but I never saw the bird alive.

Fratercula arctica (Puffin). A good-sized colony of these birds breed at Freshwater, but I think they are decreasing there. As Mr. Poole, of Shanklin, has already recorded, it is not at all unusual to find puffins washed up on the shore here during the winter and spring months.

I should have liked to add, as many authorities do in books of this nature, lists of the resident, partially resident, and migratory birds of the Island. As our knowledge on this difficult subject increases, however, we learn that many species, hitherto regarded as stationary, make more or less extended journeys in the spring and autumn. Some come and go with the greatest regularity, but many of our so-called "residents" shift with the seasons in a manner, and

for reasons, little understood. Until more is known of the movements of such birds, any statement which claimed to be authoritative on the subject would be apt to mislead, and under the circumstances I have thought it better to leave the matter alone.

I have to thank many kind friends for assisting me with these notes: Dr. Cowper, Shanklin, in collaboration with whom I have previously worked among our birds; Mr. Morey, Newport, who provided me with some old-time lists of much interest; Mr. Orchard, of Bembridge; Mr. Poole, Shanklin, a keen and reliable observer; Mr. Harry Richards, Westridge, Ryde, who has been down most of our cliffs egg-collecting; Mr. Percy Wadham, Newport, whose help has been invaluable to me; Mr. Woods, Sandown, and many more. These gentlemen have made my labours light, and I wish I could have done more justice to the information with which they have supplied me.

Of books I have consulted but few, and for this reason—that the arduous work connected with such consultation had been already so carefully and thoroughly done by Messrs. Kelsall and Munn, and the result set forth in that altogether admirable book "*The Birds of Hampshire and the Isle of Wight*." From this work I have quoted with shameless freedom, feeling that the authors had already published all the information that could be obtained of many of our rarer birds. If I could make a fuller acknowledgment than this I would do so.

The Rev. Charles Bury, so often quoted by these authors, was our next-door neighbour at Sandown during his latter years: he introduced me, as a lad, when I came to the Island in 1870, to many of the bird-haunts of the eastern district. I merely mention this as a link with the past.

MAMMALS.

BY PERCY WADHAM.

BEFORE proceeding to give a list of the Mammals which frequent the I. of W. and surrounding seas, it may be well to recall the work done by previous writers in this connection; and also to compare our Island mammalian fauna with that of the mainland of Hampshire, and with the whole of Britain.

In 1844 the Rev. C. A. Bury wrote some notes on our local Mammalia in the "Zoologist"; in 1849 Dr. Martin's "Undercliff of the I. of W." was published, in which various natural history lists, including Mammals, were given—the Rev. J. F. Dawson collaborating with the author; in 1856 Bury wrote a list of Mammals in Davenport Adams' "History of the I. of W."; and in 1860 Mr. A. G. More wrote further notes in the natural history supplement to Venables' "Guide to the I. of W." Nothing more of importance seems to have been published by way of increasing our knowledge of the Mammals of the Island until the first volume of the "Victoria History of Hampshire and I. of W." was issued in 1900.

The Rev. J. E. Kelsall, in the "Proc. Hants Field Club," vol. 4, compares the Mammals of the whole of Gt. Brit. with those of Hants and the I. of W., with the following result: Bats, 14*—11; Insectivora, 5—5; Carnivora, 8—6; Seals, 6—3; Rodentia, 13—12; Deer and Wild Ox, 4—3; Cetacea, 20—8. Total for Great Britain, 70; for Hampshire—including the Island, 48. To these figures may be added now the total for the I. of W. taken by itself—42, though several of these are either extinct as wild animals, as the marten, deer, and badger; or visit us but occasionally as the otter and the seals. The cetaceans, too, are naturally erratic and uncertain in their appearance.

Mr. J. G. Millais, in his great work, "The Mammals of Great Britain and Ireland," makes the total number of species 78, but this

* Some writers only admit 12 species as indigenous to Britain.

enumeration includes several—as the brown bear, wolf, beaver, and wild boar, which have become extinct within historic times; and two or three, as the reindeer and aurochs, which were doubtfully wild within this period.

It will be of interest to analyse Mr. Millais' list: it includes 12 bats, 1 hedgehog, 1 mole, 3 shrews, 1 cat, 1 wolf, 1 fox, 5 of the weasel kind, 1 badger, 1 otter, 1 bear, 1 squirrel, 1 beaver, 4 mice, 3 rats, 5 voles, 2 hares, 1 rabbit, 1 ox, 4 deer, 1 boar, 6 seals, 1 walrus, 20 whales and their allies.

As to books, Bell's "British Quadrupeds," the first edition of which was published in 1837 and the second in 1874, for a long time held the field as the standard work on the subject, but more recently other books have been issued. Amongst these is a valuable and very inexpensive work, "A Hand-book to the British Mammalia," by R. Lydekker, 1896—one of the volumes comprised in Lloyd's Natural History. Another useful and recent book is W. J. Gordon's "Our Country's Animals." But by far the finest work which has been brought out is Millais' "Mammals of Great Britain and Ireland." It is in three large volumes and is splendidly illustrated, but unfortunately for those who may wish to possess it, the price, eighteen guineas, is high.

The arrangement and nomenclature adopted in the following list are those of Mr. Lydekker's Hand-book.

ORDER, CHIROPTERA.

Rhinolophus ferrum-equinum (Greater Horseshoe Bat). This easily recognized bat still seems fairly plentiful where it is found, though very local in its distribution. The Undercliff is its chief stronghold, but specimens were recorded from Farringford and Sandown in 1855 by the Rev. C. A. Bury, who noticed with those collected in the winter how much longer the fur was round the neck, forming quite a tippet, and he considered this was Nature's provision against the cold weather. One of these "tippet" specimens is in the British Museum.

Plecotus auritus (Long-eared Bat). Not very plentiful, though I have had specimens from various parts of the Island. This bat varies so much in size that an attempt has been made to form a sub-species—the Lesser Long-eared Bat.

Vesperugo serotinus (The Serotine). Respecting this species Millais says: "In the I. of W. it is commoner, being reported by



H. F. Poole, photo.

YOUNG SEROTINE BAT—
from Shanklin: natural size.

the Rev. C. A. Bury, Messrs. Bond, Hadfield, More, and others from Bonchurch, Sandown, Freshwater, and Ventnor. All appear to be agreed, however, that it is rare nowadays in the Island, and I failed to obtain a single specimen in 1902." My own experience is that it is still a very common bat and generally distributed. It is interesting to note how the flight of this species slows down as soon as it captures a chaffer or other insect, and it may then be observed carrying its food in its mouth, but as soon as it has dropped the wing-cases of the insect, it quickens its flight and is on the alert for its next victim.

V. noctula (The Noctule). Mr. A. G. More, in Venables' Guide, 1860, though not actually recording this very fine bat, gives an account of the shooting, by Mr. Bond, of several specimens of *V. murinus* on Freshwater Down, but these were afterwards found to be noctules. A friend from the mainland collected some large bats at Carisbrooke in 1903, which were identified later as belonging to this species. It is evidently a rare bat in the Island.

V. pipistrellus (Pipistrelle, or Common Bat). Common everywhere, and the first to be on the wing in the evening. It is, in most cases, this species which is noticed flying about in broad daylight. It is my opinion that when a bat is seen flying about during the day in hot weather it is a case of wanting something to drink; they are thirsty animals, and I have seen them emerge from their resting-place and, after circling round once or twice, make straight for a pond, and after dipping down two or three times and sipping water they have immediately returned to rest. This bat sometimes flies by daylight during winter: I have records of its doing so in December and January.

Vespertilio daubentoni (Daubenton's Bat). Though More, in Venables' Guide, devotes a paragraph to this bat, it was afterwards found that the specimens he refers to as occurring in the Undercliff belonged to another species—*V. mystacinus*. It is now well known that this bat is very partial to water, and the mill ponds on the Lukely stream between Carisbrooke and Newport are favourite resorts of this species. My observation leads me to believe that it is the latest of all to commence its evening flight for food, as it does not appear on the wing until daylight is nearly gone.

V. nattereri (Reddish-grey or Natterer's Bat). Bury records a specimen which was brought to him that had been captured alive in a wall at Bonchurch, Dec. 13, 1844; it is also recorded from Ventnor by Hadfield.

V. mystacinus (Whiskered Bat). This seems to be rather rare in the Island, though a few specimens have been taken at various places. The last one brought to me was by the editor of this volume who found it on a wall near Sandown in August, 1907.

ORDER, INSECTIVORA.

Erinaceus europoeus (Hedge-hog). This animal, though its liking for the eggs of partridges and pheasants has led to its being persecuted by game-keepers, is well distributed through the Island. It is usually found singly, though on one occasion, at dusk, I saw three mature specimens feeding together outside Bowcombe plantation. A fine adult albino was killed in the Island, and preserved, a good many years ago. In 1896 a family of four young ones, but a few days old, was brought to me; the spines were soft and almost white. Some of the country people believe that in autumn hedge-hogs will visit orchards and roll amongst the fallen apples, and having secured some on their spines will trot off to their nests to store them for winter consumption.

Talpa europaea (Mole). Though thousands are caught annually, moles are still plentiful in every soil which suits them. Some farmers will not have them destroyed as they consider that the moles do more good than harm. Though usually only one or two of the "mole castles," or breeding-mounds, can be seen in a field, there is a meadow near the stream at Alverstone Farm where quite a number, perhaps twenty, may be noticed. A lovely golden variety of the mole is occasionally taken in the Island, and most of the 7 or 8 specimens I have handled during the last ten years have been procured between East Cowes and Wootton. One, however, was sent me alive by Mr. G. A. Wilkins from Brading; I kept it for some time and it became very tame, taking worms from my fingers without fear. The very interesting and evenly-marked pied mole, shown in the illustration, came from Wydcombe, near Whitwell, in September, 1908. Moles are called "wants" in some parts of the Island, and are believed to work only when the tide is flowing.

Sorex vulgaris (Common Shrew). Apparently very common, judging from the number of dead specimens that may be seen in roads and lanes in autumn, but rarely seen alive owing to its nocturnal and retiring habits. Although during winter this quaint little animal usually remains in a state of torpor, I once saw some dead ones on the paths of Brooke House gardens, during a mild winter, in January.

S. minutus (Lesser Shrew). This, the smallest British mammal, is less common than the last; I have, however, seen specimens from a good many localities. A keeper, living at Whitcombe, brought me one which had been caught in a mouse-trap at his house.

Crossopus fodiens (Water Shrew). Mr. More writes in Venables' Guide, that this species "has been several times seen diving in the ditches on Sandown marshes, near Alverstone and Pan Common"; but although I have spent much time by the water at Alverstone, I have never had the pleasure of seeing the water shrew, though I have often seen a long-tailed field-mouse swim across a ditch when



Percy Wadham, photo.

VARIETIES OF THE COMMON MOLE.

disturbed. Before we can assume with any feeling of certainty that the water shrew really exists in the Island a specimen should be seen at close quarters, or, better still, be captured.

ORDER, CARNIVORA.

Canis vulpes (Fox). This, the largest wild animal now existing in the Island, does not seem to have been with us for more than 120 years; for J. Hassell, writing in 1790, mentions a tame fox getting loose in the Island, much to the concern of the inhabitants, lest it "should get to a stronghold like the Undercliff and there multiply." Cornwall Simeon writes that "foxes were introduced in numbers in 1845," and from that time onwards they seem to have held their own, for though a good number are killed every year they continue to be plentiful. It is well known that foxes vary both in size and colour in different parts of Britain, and these varieties seem to be well represented in the I. of W. I have examined many foxes during the last 15 years, and have noticed that some are short legged and answer to the description of those which inhabit the low open ground of the North of England, and which are called "terrier-foxes"; another variety has a long muzzle and long legs, and generally a longer coat than usual, with quite a grey tinge to it, like those living in mountainous districts and called "greyhound foxes"; another has short fur and is very rufous in colour, the grey of the underparts being much darker, in fact quite a blue grey; the fox with a white tip to its brush and the one without it both occur in the Island. All these varieties tend to show that many foxes have been introduced from the mainland in the past. Cornwall Simeon, in his "Stray Notes on Natural History and Fishing," gives an account of a milk-white dog-fox which was taken up alive before the hounds in 1859, and was kept in captivity by the Master. A fine pack of fox-hounds is stationed at Marvel.

Mustela martes (Pine Marten). Dr. Martin, in the "Undercliff of the I. of W.," 1849, gives an account of the former occurrence of this animal in the Undercliff district. He writes that the Rev. J. F. Dawson was enabled to approach to within a short distance of a marten in this neighbourhood, and could thus identify it perfectly. Another observer noticed the track of a marten; and Lieut. J. Peel states that he saw a pair of these animals in the Landslip a few years previous to the one seen by Mr. Dawson.

M. erminea (Stoat). In spite of the war waged against it by game-keepers, the stoat still holds its own and remains fairly plentiful. Pied specimens are occasionally caught, as well as some with the ermine coat—yellowish-white all over, with a black tip to the tail. During the winter of 1904-5 I was shown five of these latter, though the season was a mild one, which leads one to think that it is not only cold weather which causes this change of colour.

M. vulgaris (Weasel). This may not be quite so common as the last, but it is still frequent in certain districts. On visiting a "keeper's larder" on the Swainston estate in 1907, and examining the "vermin" trapped during the preceding season, I noticed about 60 stoats and 40 weasels.

Meles taxus (Badger). There is no doubt that the badger is now extinct in the Island, and there seems to be some uncertainty as to whether those that were here during the last century were really indigenous, or the descendants of animals that were introduced. An Island writer (Hassell) refers to the badger in 1790, but he does not make it clear as to whether any of these animals were living in a wild state in the Island at that time; and a keeper, of Newchurch, named Loe, states that three young badgers were dug out at Brading in 1842. Bury, writing in 1856, mentions that at a later date two old and two young ones were destroyed on the Swainston estate; and adds that he was told some badgers were introduced into the Island for the amusement of sundry inhabitants of the town of Newport for badger baiting, but they escaped into the woods. In the seventies and eighties of last century there must have been a fair number of these animals in the Island, for they occurred at Brading, Knighton, Bordwood, Newchurch, Godshill Park, Chillerton Farm, and Shorwell. The last badger of which I can hear was the one dug out and killed at Sainham Farm, Godshill, in 1899.

Lutra vulgaris (Otter). Bury, when writing some 60 years ago, states that the otter still existed in the Island and had been known to breed here, and adds that about 25 years previously an old otter and two cubs had been killed in the neighbourhood of Apse Heath. Several others were killed by R. Loe, in the course of his life, about Alverstone. Mr. Bury also records having seen an old female otter in September, 1839, which had been caught napping at the head of Shanklin Chine. Although an otter was reported to have been seen several times between Shide and Blackwater in 1898, it is a good many years since one was actually killed in the Island. The last of which I can hear was a male, shot by Lord Alverstone's keeper (Buckett) in 1875. Its companion, a female, escaped, but was seen a few days later at Alverstone and then disappeared.

Halichoerus grypus (Grey Seal). Dr. Martin gives an account of a coast-guardsmen coming upon, and killing, a seal of this species on the night of Nov. 15, 1848, between Sandown and Shanklin. I understand that the specimen was stuffed and remained at Mr. Sampson's, Shanklin Chine Cottage, for some years. A rock, situated between Ventnor and Bonchurch, is known as the "Seal Rock," owing to its having been the resort of a seal many years ago. Mr. Lydekker, in his book on British Mammalia, refers to a grey seal as having been captured on the Island in 1857.

Phoca vitulina (Common Seal). About 70 years ago seals were occasionally seen in the vicinity of the Island, or even upon its



Percy Wadham, photo.

THE LAST OF THE ISLAND BADGERS.

shores. Mr. Bury relates that a fisherman, residing at Luccombe Chine, saw two seals passing westward in 1841; and in the spring of 1843 a seal appears to have remained for some days in the neighbourhood of Shanklin, as its tracks were seen repeatedly on the sands. Dr. Martin tells the story of a coast-guardsman who seems to have stumbled upon one of these creatures at night at the foot of Shanklin Chine; and at a later date a seal was seen swimming off Shanklin. Three others are known to have frequented the end of Ryde pier for awhile; and More writes of one which was disturbed in its sleep as it lay on the embankment of Brading Harbour. It is stated in the "Victoria History of Hampshire," that seals are "frequently seen on the rocks off Freshwater," but if this is so it is not generally known.

ORDER, RODENTIA.

Sciurus vulgaris (Squirrel). Is to be seen in almost every wood and plantation on the north side of the Island, and is especially plentiful in the woods at Swainston and in Parkhurst Forest. It is less common in the south of the Island. Sometimes a few squirrels will migrate from the woods, travelling along the hedges until they reach the trees on the outskirts of the towns. At other times they may be seen feeding on the young fir-cones, &c., on trees growing by the side of the main roads. Some of the Island squirrels have quite a grey fur, but this may only be indicative of age. Although these animals are decidedly harmful they are not much persecuted; though old countrymen have told me that formerly squirrel-hunts were organized, and if the hunters were successful the victims were converted into pies.

Muscardinus avellanarius (Dormouse). Although not abundant, it is generally to be found in oak woods and copses where there is an undergrowth of hazel, and it is probably commoner than most people imagine, though in the summer, owing to its retiring habits and the dense foliage, it is seldom seen. In the winter, however, the woodman often finds the hibernating nest with its curled-up inmates in the stump of a hazel. A Swainston woodman informs me that in Elm Copse, during the winter of 1906, he came upon 20 of these pretty creatures, but although he liberated them he failed to find a single specimen in the following winter. Occasionally dormice are found with white tips to their tails.

Mus minutus (Harvest Mouse). I believe the harvest mouse still occurs in the Island, though I have but few actual records of its occurrence during the last few years. During the winter of 1907-8 I came across a fair number of nests, in different parts of the Island, which I feel convinced were the summer breeding homes of harvest mice. They occurred round the hedges of arable fields amongst the

high stalks of grass, &c., and were of the material, shape, and height from the ground usual with these mice. They are less often heard of than formerly, but this may be owing to the introduction of machinery for harvesting: when reaping was done by hand the nests which occurred amongst the corn stalks were much more readily seen. Mr. Morris, of Idlecombe Farm, tells me he came across a nest containing the young of the "little yellow mouse" on the down in the summer of 1907.

M. sylvaticus (Wood Mouse). Also known as the Long-tailed Field-mouse. It is very common in gardens and elsewhere and is destructive to crops. A few years ago some gardens at Wootton suffered greatly from the ravages of these mice. I have a mouse of this species which was brought to me alive in January, 1908, that had been caught in an ordinary mouse-trap in a house. It is different from the ordinary wood-mouse, and in some ways resembles the dormouse.

M. musculus (Common Mouse). Unfortunately too numerous everywhere. A fine variety of this species is found in some stores near the old Newport Burial-ground. It is not only larger than the typical mouse but is of a beautiful cream colour. At the request of the authorities at the Natural History Museum, I collected some specimens in 1899 and sent them to the Museum at South Kensington for examination: no structural difference could be found, however, between them and ordinary mice. Though usually regarded as a pest, a convict at Parkhurst made quite a pet of a mouse during the last two years of his imprisonment, and when released in January, 1903, he carried his little friend away in his cap.

M. decumanus (Brown Rat). Very common everywhere. When found in the vicinity of water, which frequently happens, they are often regarded as "water-rats." A melanic variety was seen several times near Pan Farm, Newport, in 1904.

Microtus agrestis (Field Vole). Known also as the Short-tailed Field-mouse. Plentiful in most districts, and very destructive both in fields and gardens.

M. glareolus (Bank Vole). Not so common, perhaps, as the last, but I have personally found it in several localities. I think the reason it is not more often seen is because of its haunting banks, especially those with old ivy roots, whereas its congener frequents more open situations.

M. amphibius (Water Vole). Common at the sides of many dykes and ditches, and especially plentiful along the banks of the Yar and the upper reaches of the Medina. It is absent from the Lukely stream, but as this is a resort of the brown rat, it is probable that the harmless vole, or water-rat as it is often called, has been driven away.



H. F. Poole, photo.

DORMOUSE AND NEST:
from Bordwood.

Lepus europaeus (Hare). Still plentiful, though probably not so abundant as it was many years ago. I am informed by a keeper on the Nunwell Park estate that, in Sir John Oglander's life-time, when the farmers were having their shoot, they killed 62 hares by the time they had finished two covers, but in the present day it is unusual to see a hare there. They are most numerous now at Heasley and Dunsbury, where 30 or 40 would be started during a day's coursing; and they are increasing in the Bowcombe Valley, for on one day recently, Feb. 13, 1908, the coursing party started 46 hares when working the grounds of Bowcombe Manor and Froglands. When coursing at Dunsbury in 1903 a hare was chased on to the shore and being hard pressed took to the water and swam out to sea, but was followed by a hound and killed. An unusually fine hare killed at Cridmore weighed 11lb.2oz. A grey hare was to be seen at Dunsbury during 1904-5; there is also a grey hare, labelled Arreton Manor, in the Museum at Newport; and Mr. Morris of Idlecombe has a silver-grey specimen which he tells me came from Langbridge. As there are now four packs of hounds in the Island hares may be expected to have a lively time in the near future.

L. cuniculus (Rabbit). Numerous everywhere, and would become a serious plague in the Island if vast numbers were not killed by sportsmen and trappers. Though 100 rabbits would be considered a very good day's sport, yet occasionally many more than this are obtained: a few years ago 200 were killed in one day at Fulholding, and about the same number at Great Park; at Lower Hampstead, in February, 1908, the bag numbered 246; and on the 18th of the same month 350 were shot at Everton. Having ascertained that as many as a thousand rabbits are killed yearly on certain farms, and from information derived from various sources, I have come to the conclusion that the total number of these animals destroyed in the I. of W. annually can scarcely be less than 100,000. From an economic point of view, and as a product of the soil, these figures are interesting, as at 9d. each they represent a revenue of £3750; and in addition to this is the value of the skins which always command a ready sale. There are two rabbit warrens in the Island: one of about 120 acres at Hampstead, and the other, known as Headon Warren, near Alum Bay. Occasionally rabbits of unusual colour occur, black being the most frequent, and I have a preserved cream-coloured specimen which I shot at Fairlee. I once witnessed an interesting incident which shows that rabbits are not necessarily averse to water: on a summer evening I was sitting behind a bush near a pond, which was situated in an open field, when a rabbit came quietly up and to my surprise took to the water and swam round the pond until it arrived at its starting point when it came out and ran away.

ORDER, UNGULATA.

Cervus elaphus (Red Deer). We read that red deer were hunted in Parkhurst Forest—formerly much larger than now—by royal personages and others from Norman times onwards for several centuries, and also in Bordwood Forest; the species is therefore included in the list as a matter of historic interest. Bones and fragments of antlers of red deer have been found at Bonchurch and other parts of the Undercliff.

C. dama (Fallow Deer). This deer also is mentioned in the early records as having been hunted in the extensive woods which then existed at Parkhurst and Bordwood.

ORDER, CETACEA.

Balaenoptera musculus (Common Rorqual). A huge whale of this species was seen in April, 1842, by a man stationed at the Needles Lighthouse. When first observed it was close to the rocks outside the Needles, and seemed to be alive but in a weak state. The next morning it was found stranded at Totland Bay, and was afterwards towed with great difficulty to Gurnard. Here it was sold by auction and cut up preparatory to the extraction of the oil; but the bones were removed to Blackgang, and the skeleton was reconstructed and set up in a specially-built pavilion where it is still on view. It is about 80 feet long. The specimen was at first wrongly identified as the Northern Rorqual.

B. borealis (Rudolphi's Rorqual). The Rev. J. E. Kelsall records a specimen of this whale which was seen alive off Ryde in September, 1888. He describes how it was hunted for three or four hours by about a dozen boats, and eventually it seems to have been stranded on the beach at Sea View. Mr. Kelsall states, as his reason for believing the specimen to have been of this species, that the head was much broader than in the last named, but Mr. Lydekker suggests, in Lloyd's Natural History, that the example was probably a common rorqual. It was $39\frac{1}{2}$ feet long.

Hyperoodon rostratus (Bottle-nosed Whale). A specimen of this whale is recorded in the "Victoria History" as having been captured in Southampton Water, Sept. 8, 1798. It is included in this list as it must have passed the shores of the Island. It was 25 feet in length and 6 tons in weight.

Phocaena communis (Porpoise). A shoal of porpoises is often seen off various parts of the Island, and individuals occasionally come up the Medina as far as Newport.

Globicephalus melas (Pilot Whale, or Black-fish). Mr. G. Guyon records a specimen of this Cetacean in the "Zoologist" under the name of the "Round-headed Porpoise." It was stranded at St. Lawrence in December, 1853.



Percy Wadham, photo.

THE WHITE-SIDED DOLPHIN.

Grampus griseus (Risso's Grampus). In the spring of 1843 a grampus of this species came ashore at Puckaster Cove, and was killed. It was the first specimen recorded for the British seas, and the skeleton is now in the British Museum.

Lagenorhynchus acutus (White-sided Dolphin). A rare North Atlantic dolphin, a specimen of which was found alive on the rocks at Alum Bay in Whitsun week, 1908. It was identified by Mr. Lydekker of the British Museum, who, writing in Lloyd's Natural History, in 1896, states that no example seems to have been recorded from the English seas, though a few have been taken off the Scotch coast. Adults of this species are from 6 to 8 feet long, but the specimen with which we are now concerned, which has been preserved and placed on view at Alum Bay Pier, is but 3ft. 9in. long.

Tursiops tursio (Bottle-nosed Dolphin). This fine addition to our list of Island mammals was captured between Sandown and Shanklin on Dec. 7, 1898. It is stated by Lydekker to be but a rare visitor to the coasts of Britain. Its length was 10ft. 10in. and its weight 15 cwt. I boiled down its blubber, which made a fine dressing for shooting boots, as it renders the leather quite impervious to water.

SUMMARY.

BY THE EDITOR.

THE following table represents the number of species of plants and animals which are recorded in the present volume as occurring in the Isle of Wight. It should be understood that whilst with some groups, such as the Flowering Plants, Birds, and Mammals, the numbers recorded include practically all that occur in the Island, there are other neglected branches, as the Foraminifera, Sponges, and Tunicates, of which the figures given represent but a few species casually noticed, and are no guide whatever to the numbers which probably occur.

The totals given are of "species," and do not include the many named sub-species and varieties which are mentioned in the lists, though, as every naturalist will understand, it is not always possible to say with certainty as to whether certain forms shall rank as species, or as sub-species or varieties.

Fungi, including Mycetozoa, species recorded	...	443
Freshwater Algae	" "	105
Marine Algae	" "	216
Lichens	" "	209
Hepatics	" "	35
Mosses	" "	183
Flowering Plants, Ferns, &c.	" "	1032
Rhizopoda and Heliozoa	" "	11
Foraminifera	" "	5
Infusoria	" "	105
Sponges	" "	6
Coelenterata	" "	46
Echinodermata	" "	10
Rotifera	" "	85
Polychaeta	" "	13

Polyzoa	species recorded	...	51
Mollusca, non-marine	"	"	93
Ditto, marine	"	"	140
Arachnida	"	"	153
Crustacea	"	"	67
Myriapoda	"	"	11
Orthoptera	"	"	23
Neuroptera	"	"	29
Hymenoptera	"	"	472
Coleoptera	"	"	1434
Lepidoptera	"	"	972
Diptera	"	"	281
Hemiptera	"	"	324
Tunicata	"	"	9
Fishes	"	"	120
Amphibians	"	"	5
Reptiles	"	"	4
Birds	"	"	248
Mammals	"	"	42
Total	...	...	6982

METEOROLOGY.

BY JOHN DOVER, M.A., F.R.Met.S.

MY experience of Meteorological Observations in the Isle of Wight is almost entirely confined to the parish of Totland Bay in the extreme West of the Island. There is no part of the Island six miles from the sea. Blackwater, about two miles south of Newport, is probably further than any other parish from the coast, being about six miles inland. Temperature and rainfall records are taken daily at Newport, about four miles from the sea. The parish of Totland Bay is almost surrounded by water, every part of it being within a mile of the sea. This parish is irregular in shape, with a boundary line of eight miles. Totland is bounded on the East and North-East by the parish of Freshwater; all the other sides are washed by the salt waters of the Solent or the English Channel. Although a small parish of about 1332 acres, with a population of 1328 at the census taken in 1901, it has a long coast line of about six miles, owing to the curves of Colwell Bay, Totland Bay, Alum Bay, and Scratchell's Bay. The nearness of the sea to all parts of this parish has a moderating influence on our temperature. In summer we do not get the extreme heat, nor in winter the extreme cold of an inland parish. The sea is at its coldest about the middle of February, not reaching its warmest point until the middle of August.

The Meteorological station in Totland is at Aston House, about 140 feet above the sea level, and 200 yards from the shore. This meteorological station is about midway between Ventnor and Bournemouth. I give the above details because the extremes of temperature are so much influenced by the distance of the instruments from the sea, especially for the first and second mile.

The averages are for the last twenty-two years, except where otherwise stated. Extreme readings are also given, with dates on which they occurred. It is a much debated point whether the prime consideration should be given to the extremes, or whether the chief interest lies in the average readings. I therefore give some details of extremes and

averages whenever likely to be of interest to the general public. The chief difficulty here is perhaps the wind, both as to direction and to its force; this is owing to the uneven surface of the surrounding country. The Downs on the Southern side of the parish are about a mile distant. They rise at the highest point in Totland to 489 feet. The Tennyson Memorial Beacon Cross is the landmark at this highest point. Headon Hill, the happy hunting ground for Geologists to the South-West, is nearly 400 feet high, and about half a mile from the meteorological instruments. Thus we are much protected from the strong gales from the South-West. With regard to sunshine, it should be remembered that the Campbell-Stokes Burning Recorder registers only "bright sunshine"; weak sunshine is not powerful enough to burn the recording cards. I frequently note that the sky is quite clear at Totland, while the New Forest and the valleys of the Christchurch Avon and Yar rivers are clothed in vapour. Owing to surrounding houses it is impossible to measure bright sunshine, if any, during the last hour before sunset: therefore sunshine at Totland is rather more than I record.

There is a marked absence of thunderstorms at this station; thus we do not often get the opportunity of watching the glories of a near storm. This is to be accounted for by the line of the Downs rising almost perpendicularly from the sea to the South, and coming to a fine point at the Needles to the South-West, thus breaking or dividing the storms from the South and West, sending them up the Solent and the English Channel. To the North and East there are the attractions to thunder clouds of the New Forest and Parkhurst Forest.

The prevailing winds here are West 77 days, South-West 66 days, North-West 52 days of the average year. The majority of gales rise in the South-West, reaching their intensity in the West, finally dying away in the North-West. Humidity is calculated with Glaisher's Hygrometrical tables. The atmosphere is somewhat damper here than at many inland stations, or on the East coast, since we do not get many keen Easterly winds to dry the air. The Rainfall is considerably less than in the West or North-West of England, but slightly more than at some of our inland or East-coast stations. A day is termed wet if one hundredth of an inch of rain fall. A day is called foggy if one cannot see two miles, which is a somewhat stricter test than at most stations.

The Instruments used are all by Negretti and Zambra, verified at Kew and tested periodically by an officer of the Meteorological Office.

The Barometer is a Standard; it is on the East wall of the hall, which is on the East side of the house. The Barometer is 144 feet above the sea; it is so hung that the sunshine can never reach it. The self-recording Aneroid is only a few feet from the Standard. For practical purposes the recording aneroid is the most useful, but for scientific purposes the Standard must be relied on.

The Thermometers are in a Stevenson Screen 40 yards from the South-East corner of Aston House. There are four instruments in the screen—a self-recording maximum, a self-recording minimum, a dry bulb, and a wet bulb.

The Thermometer Screen is repainted annually in the Spring. A self-recording Grass Thermometer is also used for registering the ground frosts; this is placed about 60 yards from the South-East corner of the house.

The Rain-gauge is an "eight-inch," in the open a few feet from the Grass Thermometer.

The Weather Vane is 61 feet from the ground, a few feet above the roof of the turret constructed for carrying the vane higher than surrounding objects.

The Anemometer is of the Robinson cup pattern, about 50 feet above the ground. This instrument is a guide to the velocity of the wind. The dials of the Anemometer are indoors and can be read at any time without discomfort. The cups are 5 inches in diameter; they are placed upon 12-inch arms. The connecting rods, from the cups' axle to the dials, are passed through tubes, which are set vertical.

A Campbell-Stokes Burning Recorder is used for measuring the amount of bright sunshine.

BAROMETER

The chief interest to the public in readings of the barometer consists rather in the extremes than in the averages of the past. The readings are reduced to sea level and 32° Fah. I give here a table of averages for each month, and extreme day of each month, for the nine years 1900—1908 at 9 a.m.

		<i>Average for month.</i>	<i>Highest day.</i>	<i>Lowest day.</i>
January	...	30'122	30'999*	29'041
February	...	29'951	30'767	28'524
March	...	29'945	30'651	28'855
April	...	29'945	30'631	29'318
May	...	29'989	30'543	29'244
June	...	30'026	30'448	29'384
July	...	30'051	30'523	29'516
August	...	30'011	30'450	29'360
September	...	30'081	30'637	29'427
October	...	29'939	30'604	28'995
November	...	29'951	30'606	28'825
December	...	29'994	30'902	28'678
Year	...	30'000	30'999	28'524

HUMIDITY

(Saturation = 100)

Sufficient importance is rarely given to the moisture of the atmosphere in our English health resorts. Many suffering from weak lungs cannot withstand a very dry climate, nor yet an inland damp air where fresh-water fogs prevail. The sea fog does not seem to have the same trying effect as that of a river fog.

The averages given for each month are on the readings taken during the 22 years ending 31 December, 1908. The extremes are those for the driest day in each month.

* The barometer on 29 January, 1905, was probably higher than 30'999 inches about 2 a.m., since at that hour my self-recording aneroid was one-twentieth of an inch higher than at 9 a.m.

Other extreme readings since 31 October, 1886 :—

30'904	inches	on	15 Jan., 1902
30'972	"	"	27 Jan., 1905
30'994	"	"	28 Jan., 1905
28'400	"	"	8 Dec., 1886
28'430	"	"	11 Nov., 1891
28'405	"	"	29 Dec., 1899

			<i>Humidity.</i>	<i>Extreme readings.</i>	
January	...	...	85.8	36 on	3 Jan., 1894
February	...	...	84.7	38	11 Feb., 1895
March	...	...	82.8	39	3 Mar., 1892
April	...	...	79.5	47	{ 26 April, 1893 14 April, 1903
May	...	...	76.4	53	26 May, 1903
June	...	...	78.1	42	8 June, 1906
July	...	...	77.5	41	18 July, 1901
August	...	...	78.3	52	16 Aug., 1907
September	...	...	80.6	52	2 Sept., 1906
October	...	...	83.9	59	{ 26 Oct., 1893 17 Oct., 1905
November	...	...	86.4	55	28 Nov., 1890
December	...	...	86.2	44	28 Dec., 1908
Year	...	...	81.7	36	3 Jan., 1894

WIND

The prevailing direction of the wind is from the West. The effect of the wind is to moderate the temperatures at this station. In the winter it keeps the air warm, in the summer it has a cooling effect so that there is but rarely a dry hot day during the warm months of the year.

I give the average direction of the wind for the past nine years. From this table it will be seen that Southerly and Easterly breezes are to be the least expected, while the most frequent are from the West, South-West, and North-West.

<i>Direction.</i>	<i>Days.</i>	<i>Per cent.</i>
North	32	9
North-East	46	12
East	31	9
South-East	36	10
South	25	7
South-West	66	18
West	77	21
North-West	52	14
	365	100

The greatest amount of wind for one day has been 776 miles for 24 hours ending 9 a.m. on 13 Dec., 1903.

The greatest amount of wind for one month has been 11,185 miles during March, 1903.

TEMPERATURE

The primary interest in any place from a meteorological point of view is its temperature. In this branch of meteorology we find critics keenly divided. Some decide on the merits of a health resort by its average temperature; others consider almost entirely extreme temperatures. From a pleasure point of consideration, "What temperature do you usually record in Totland?" is the frequent question: while an invalid or doctor will at once ask, "What extremes of temperature have you recorded in Totland?" I consider both, giving first the average temperatures for each month of the year, and then the extremes for the past 22 years.

		<i>Average of temperature.</i>			<i>Extreme range of temperature.</i>
		<i>Max.</i>	<i>Min.</i>	<i>Mean.</i>	
January	...	44'5	36'3	40'4	60'0—14'0
February	...	44'6	35'6	40'1	58'0—16'0
March	...	48'0	37'0	42'5	62'6—23'0
April	...	53'4	40'8	47'1	74'0—28'0
May	...	59'5	45'9	52'7	77'0—34'0
June	...	64'8	51'5	58'2	84'0—41'0
July	...	67'7	55'3	61'5	86'0—43'8
August	...	67'2	55'4	61'3	83'0—46'0
September	...	64'5	52'1	58'3	80'5—40'6
October	...	57'0	46'6	51'8	72'5—28'0
November	...	50'9	42'3	46'6	61'7—20'0
December	...	46'3	38'0	42'1	59'0—16'1
Year	...	55'7	44'7	50'2	86'0—14'0

HEAT AND COLD

I give now the extreme days of heat and cold in true shade in Totland during the past twenty-two years. It will be seen that on only thirteen days did the thermometer rise above 80° Fah.; and on only eleven days did the thermometer fall below 20° Fah. For the sake of comparison I append a few extreme temperatures in other places.

HEAT

*Totland temperature over
80° Fah. since Oct., 1886.*

1893—June 17	... 81'0
„ „ 18	... 83'0
„ „ 19	... 84'0
1898—Sept. 17	... 80'5
1899—July 20	... 81'0
„ Aug. 3	... 83'0
1900—July 19	... 86'0
1901—July 19	... 81'2
„ Aug. 20	... 81'2
1904—July 10	... 81'1
1906—Aug. 30	... 80'1
1908—June 4	... 82'3
„ July 2	... 80'7

Hot days in other places.

1817—June 21, Gloucester	... 103'0
1890—June, Weymouth	... 86'5
„ „ Truro	... 92'0
„ „ Ventnor	... 82'3
„ „ 19, Osborne	... 93'4
1893—Aug. 17, Greenwich	... 94'2
1898—Sept. 8, Berkhamstead	... 90'3
1899—Aug. 5, Brighton	... 89'4
1900—July 19, Salisbury	... 91'0
„ „ 20, Cambridge	... 95'0
1901—July 19, Newport, I.W.	91'8
„ „ 20, Aberystwith	... 93'0
1904—Sept. 3, Adelaide	... 114'0
1906—Sept. 1, Jersey	... 89'4
„ „ „ Kew Observatory	91'8
„ „ „ Tunbridge Wells	90'8
„ „ 2, Bawtry, York	96'0
„ „ „ Camden Square	94'0
„ „ „ Westminster	... 91'3
„ „ 3, Cromer	... 93'4

COLD

*Totland temperature below
20° Fah. since Oct., 1886.*

1890—Dec. 31	... 19'0
1891—Jan. 18	... 19'0
„ „ 19	... 19'0
1894—Jan. 5	... 14'0
„ „ 6	... 14'0
1895—Jan. 11	... 19'0
„ Feb. 6	... 17'0
„ „ 7	... 17'0
„ „ 8	... 19'0
„ „ 9	... 16'2
1908—Dec. 30	... 16'1

Cold days in other places.

1890—Dec., Rugby	... 1'0
1891—Jan. 19, Torquay	... 14'0
1892—Feb. 17, Loughborough	0'0
1894—Jan. 5, Eastbourne	... 14'7
„ „ 5, Brighton	... 13'2
„ „ Ventnor	... 15'6
„ „ Weymouth	... 15'4
1895—Feb. 7, Bath	... 7'0
„ „ 7, Cambridge	... 3'8
„ „ 8, Greenwich	... 6'9
„ „ 8, Oxford	... 7'5
„ „ 9, Salisbury	... 4'4
„ „ Tunbridge Wells	4'4
„ „ 11, Buxton	... -11'1
„ „ 11, Braemar	... -17'0
1903—Jan. 26, Dawson	... -60'8
„ May 16, Cape Armitage*	- 67'7
1904—June 18, Winnipeg	... -42'0
1908—Dec. 30, Newport, I.W.	8'0
„ „ 30, Marlborough	... 4'0
„ „ 30, Liphook, Hants	- 1'0

* Cape Armitage in Ross Island, Antarctic, 167E, 77½S.

WEEKLY AVERAGE OF TEMPERATURE

For those who are interested in detail I now give the average temperature, max., min., and mean, for each week of the year.

FIRST QUARTER				SECOND QUARTER			
<i>Week ending</i>	<i>Max.</i>	<i>Min.</i>	<i>Mean.</i>	<i>Week ending</i>	<i>Max.</i>	<i>Min.</i>	<i>Mean.</i>
Jan. 7 ...	44'1	35'6	39'9	April 7 ...	52'1	39'7	45'9
14 ...	44'4	36'3	40'4	14 ...	52'7	40'2	46'5
21 ...	44'9	36'6	40'7	21 ...	53'5	40'6	47'1
28 ...	44'7	36'7	40'7	28 ...	55'1	41'9	48'5
Feb. 4 ...	44'3	36'0	40'1	May 5 ...	55'4	43'7	49'5
11 ...	44'5	36'1	40'3	12 ...	59'0	45'0	52'0
18 ...	44'5	34'9	39'7	19 ...	59'6	45'7	52'6
25 ...	44'9	35'5	40'2	26 ...	61'0	46'7	53'9
Mar. 3 ...	44'5	34'5	39'5	June 2 ...	62'3	48'8	55'5
10 ...	46'5	36'4	41'4	9 ...	64'6	50'5	57'6
17 ...	47'9	37'1	42'5	16 ...	63'3	50'2	56'7
24 ...	48'5	37'4	42'9	23 ...	64'5	51'5	58'0
31 ...	50'5	38'3	44'4	30 ...	67'2	53'9	60'5
	<hr/> 45'7	<hr/> 36'3	<hr/> 41'0		<hr/> 59'2	<hr/> 46'0	<hr/> 52'6

From this table of Totland Averages for 22 years we may conclude that there is but little difference in the weekly temperature during the winter, from Dec. 21st to March 21st, the variation of mean temperatures being about three degrees. The first week of the year we may expect to be the coldest by day; the ninth week of the year is the coldest by night; while for mean temperature the ninth is the coldest week of the year. The three main influences at work are the sun at its weakest at the end of December, the sea at its coldest toward the end of February, and the wind from the coldest direction usually at the end of the winter.

During the second quarter the temperature mounts steadily up both by night and by day. There is one exception—the second week of June, during which the warmth advances too quickly; this doubtless would show a different result if my averages were taken over a long period instead of only over 22 years.

THIRD QUARTER				FOURTH QUARTER			
<i>Week ending</i>	<i>Max.</i>	<i>Min.</i>	<i>Mean.</i>	<i>Week ending</i>	<i>Max.</i>	<i>Min.</i>	<i>Mean.</i>
July 7 ...	66·9	54·2	60·6	Oct. 6 ...	59·6	49·8	54·7
14 ...	67·7	54·5	61·1	13 ...	58·0	47·7	52·9
21 ...	68·5	55·5	62·0	20 ...	56·9	46·1	51·5
28 ...	67·6	56·7	62·2	27 ...	55·4	44·1	49·7
Aug. 4 ...	68·3	55·8	62·1	Nov. 3 ...	54·9	45·6	50·2
11 ...	67·3	55·7	61·5	10 ...	52·5	43·4	47·9
18 ...	67·8	55·8	61·8	17 ...	52·0	43·5	47·7
25 ...	67·4	55·2	61·3	24 ...	49·3	40·7	45·0
Sept. 1 ...	66·4	55·5	61·0	Dec. 1 ...	48·1	39·8	44·0
8 ...	66·3	54·5	60·4	8 ...	47·9	39·8	43·9
15 ...	64·9	51·9	58·4	15 ...	47·4	39·0	43·2
22 ...	64·0	51·6	57·8	22 ...	45·9	37·9	41·9
29 ...	63·2	51·4	57·3	9 days 31 ...	44·2	36·0	40·0
	<hr/>	<hr/>	<hr/>		<hr/>	<hr/>	<hr/>
	66·6	54·5	60·6		51·7	42·6	47·1

During the summer, from June 22nd to September 24th, the weekly mean temperature varies about $4\frac{1}{2}$ degrees; this is rather a greater difference than we find in the winter term. The sun reaches its greatest elevation and power at Midsummer day, the sea does not reach its warmest point until the latter half of August, the prevailing winds do not allow a great variation of temperature at this period of the year. We may expect our warmest mean temperature about the end of July or beginning of August. The third week of July is usually the warmest by day, and the last week of July the warmest by night. Absence of cloud by night means a great loss of temperature by night. Clouds being more prevalent in the winter than the summer at Totland, we lose less of our day temperature in the winter by radiation than in the summer.

From September 24th, the last day of summer, when the autumn begins, we note the almost steady decline in temperature both by day and by night (except the first week of November) until December 22nd when winter commences.

RAINFALL AND WET DAYS

The annual rainfall at Totland is moderate in amount, being considerably less than the fall on the West coast of England, but somewhat more than the amount on the Eastern coast.

<i>Average year.</i>	<i>Inches.</i>	<i>Wet days.</i>	<i>Average year.</i>	<i>Inches.</i>	<i>Wet days.</i>
January ...	2'24	15'0	August ...	2'43	13'0
February ...	1'85	12'6	September	2'04	12'0
March ...	1'96	14'3	October ...	4'23	17'6
April ...	1'82	12'4	November	2'92	15'2
May ...	1'67	11'0	December	2'67	17'8
June ...	1'78	10'3			
July ...	1'92	10'8	Year ...	27'52	162'0

Twelve Driest Months.

	<i>Inches.</i>
1891 February ...	0'33
1893 April ...	0'01
1895 February ...	0'10
„ May ...	0'30
„ September ...	0'11
1896 February ...	0'28
„ May ...	0'41
1897 July ...	0'38
1898 March ...	0'35
„ July ...	0'44
1905 May ...	0'49
„ July ...	0'25

Thirteen Wettest Months.

	<i>Inches.</i>
1888 November ...	5'05
1889 October ...	7'81
1891 August ...	5'53
„ October ...	10'45
1893 October ...	5'05
1894 November ...	5'79
1896 September ...	8'19
1900 February ...	5'07
1903 October ...	8'40
1905 March ...	5'20
1906 January ...	6'80
„ October ...	5'87
1907 October ...	7'07

Four Wettest Days.

1'93 inches on 20 Aug., 1891	1'65 inches on 18 Oct., 1893
1'75 „ „ 21 Oct., 1891	2'44 „ „ 11 Nov., 1894

Wet Years.

36'74 inches during 1891
35'36 „ „ 1903

Dry Years.

24'70 inches during 1896
22'05 „ „ 1899
24'71 „ „ 1902
24'65 „ „ 1905
21'68 „ „ 1908

Dry Quarters.

4'96 inches	1 Oct.—31 Dec., 1890
1'94 „	1 April—30 June, 1893
2'48 „	1 July—30 Sept., 1906
2'39 „	1 Jan.—31 Mar., 1907

Longest period without rain—16 March to 29 April, 1893.

Smallest number of wet days in one year—135 during 1895 & 1899.

Greatest number of wet days in one year—187 during 1891.

				<i>Inches.</i>
Rainfall during 1897 at Shawford, Dominica, West Indies ...				181'46
" " 1903 at Dawson, Canada, N.W. ...				10'74
" " 1904 at Seathwaite, Lancashire ...				130'04

BRIGHT SUNSHINE

My records of bright sunshine here as registered by the Campbell-Stokes Burner are confined to the last seven years.

The term "Sunless day" means that although the Sun may appear, it does not shine with sufficient strength to record its mark: this frequently happens during the 3 dark months—November, December, and January.

AVERAGE.

		<i>Hours of Bright Sunshine.</i>	<i>Sunless Days.</i>
January ...	...	76'1	10'1
February...	...	86'1	6'8
March ...	...	135'2	5'1
April ...	...	169'8	3'0
May ...	...	203'5	2'3
June ...	...	218'5	2'3
July ...	...	256'2	1'1
August ...	...	205'3	1'0
September	...	155'8	2'0
October ...	...	110'8	4'9
November	...	80'6	9'0
December	...	53'2	13'0
Year	...	1751'1	60'6

NOTE.—Owing to adjoining properties I am unable to record any bright sunshine during the hour before sunset for half the year, therefore the true amount of bright sunshine is greater than I record.

The year 1908 gives a total of 1992'9 hours of Bright Sunshine in Totland Bay. For the same year:—

	<i>Hours</i>		<i>Hours</i>		<i>Hours</i>
Jersey	2001	Portsmouth	1949	Guernsey	1933
Worthing	1992	Bournemouth	1933	Eastbourne	1932
Bognor	1959	Ventnor	1933	Brighton	1925

HOURS OF BRIGHT SUNSHINE IN 1908

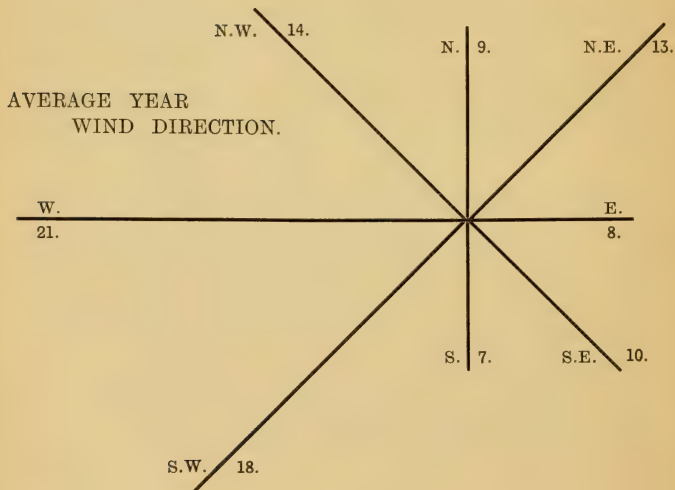
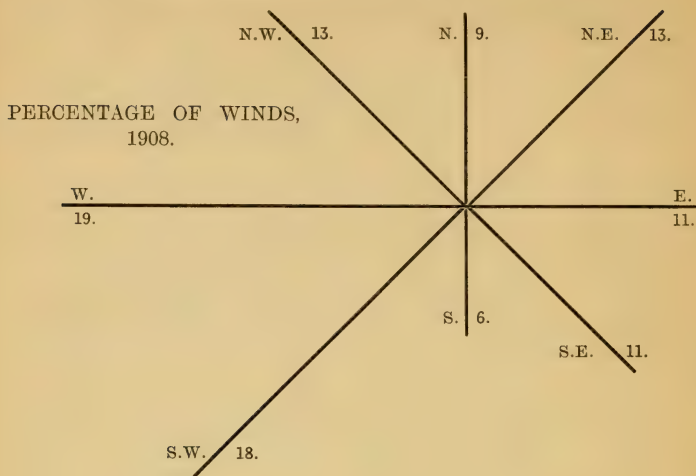
	JANUARY.	FEBRUARY.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	YEAR.
Edinburgh ...	44	84	77	97	182	210	148	190	70	94	46	28	1270
Scarboro' ...	36	93	132	127	173	175	152	179	131	109	50	21	1378
Harrowgate...	65	90	106	123	170	214	167	171	98	82	44	23	1353
Cromer ...	66	62	129	135	200	192	171	183	146	122	62	20	1488
Dublin* ...	63	68	117	155	200	183	182	165	109	109	80	37	1468
Rhyl ...	98	77	107	165	201	230	206	202	136	143	81	50	1696
Oxford ...	52	68	79	131	194	257	204	208	124	113	71	29	1530
London* ...	22	47	75	132	178	246	173	197	137	98	46	13	1364
Ramsgate ...	78	87	112	163	206	222	249	229	185	163	87	33	1814
Hastings ...	92	89	114	173	205	264	232	234	180	153	110	41	1887
Eastbourne...	87	89	140	186	206	283	235	235	181	147	102	41	1932
Brighton ...	88	92	129	158	205	296	236	245	164	159	104	49	1925
Worthing ...	96	94	143	176	222	301	240	252	164	151	103	50	1992
Bognor ...	91	93	146	178	216	288	236	255	154	138	107	57	1959
Portsmouth*	87	95	126	175	231	299	247	262	140	134	110	43	1949
Ventnor ...	98	80	144	177	210	280	238	253	154	131	116	52	1933
Totland Bay	99	79	136	181	222	298	254	252	156	143	116	58	1994
Bournemouth	81	73	125	182	234	298	247	259	144	123	116	51	1933
Weymouth ...	82	70	126	166	211	277	236	260	141	133	104	51	1857
Torquay ...	63	72	149	169	224	280	225	237	141	114	75	48	1797
Falmouth ...	49	74	153	184	183	242	200	233	162	119	94	50	1743
Scilly* ...	56	61	158	184	176	231	240	210	160	130	87	52	1745
Guernsey* ...	81	76	168	186	215	235	240	242	171	155	114	50	1933
Jersey* ...	96	68	175	185	195	260	244	249	184	161	123	61	2001

* For Dublin, London, Portsmouth, Scilly, Guernsey, and Jersey, readings at Phoenix Park, Westminster, Southsea, St. Mary, St. Peter's Port, and St. Helier are quoted.

In the totals of each month whole numbers only are given. Thus 50·0, 50·1, 50·2, 50·3, 50·4 would be quoted 50; while 50·5, 50·6, 50·7, 50·8, 50·9 would be entered 51.

I am indebted to the Meteorological Office for kindly checking my sunshine figures.

WIND-ROSE FOR TOTLAND BAY



FOG, FROST, GALES, HALOS, HAIL, SNOW,
LIGHTNING, THUNDER.

Fog.—In the average year fog is with us on 29 days. In registering fog I may be more strict than some recorders, since I enter the day as “foggy” if at any time during the 24 hours I cannot see two miles owing to fog.

Ground Frost.—We usually get ground frost on 66 days of the year.

Frost in Screen.—The thermometer in the screen falls to freezing point on 27 days in the average year. It is a rare thing to register a frost here before November or after March in any winter.

The average date for the earliest frost in screen is November 22nd, and the average latest date March 25th in each winter.

Gales.—Almost all our gales are from the South-West or West. There are on the average 29 gales in each year. The last part of the gale is felt most in Totland and comes usually from the N.W.

Halos.—Solar Halos appear usually on 15 days, and Lunar Halos on 3 days of the year.

Hail.—We expect to see hail here on 8 days of each year.

Snow.—There is not much snow in Totland, it seldom appearing beyond 10 days in any winter.

Lightning.—On about 11 days per year we see lightning, and hear thunder on 11 days. It is seldom more than twice in any year we have a lightning flash within a mile.

METEOROLOGY (continued).

(Being observations made at the Royal National Hospital, St. Lawrence (Ventnor), during the 20 years from 1887 to 1907, both inclusive, but omitting the year 1892).

BY MISS M. GIBSON, M.P.S.

TABLE SHOWING THE AVERAGES FOR EACH MONTH.

<i>Month.</i>	<i>Mean Temp. in deg. F.</i>	<i>Sunshine hours.</i>	<i>Sunless days.</i>	<i>Rainfall inches.</i>	<i>Rainy days.</i>	<i>Humidity percentage.</i>
Jan. ...	41'7	65'3	11'0	2'54	15	87
Feb. ...	41'2	80'4	8'5	1'93	12	85
March ...	43'9	129'2	5'5	1'94	14	82
April ...	48'0	173'7	3'2	1'79	13	77
May ...	53'3	213'8	2'2	1'74	12	75
June ...	58'7	211'2	2'1	1'92	11	77
July ...	62'0	256'2	1'2	2'07	10	75
Aug. ...	62'1	213'6	1'8	1'97	13	76
Sept. ...	59'5	171'6	2'5	2'34	11	77
Oct. ...	53'1	114'4	5'1	3'87	16	80
Nov. ...	47'7	74'8	9'5	3'11	15	84
Dec. ...	43'5	50'2	13'0	2'55	16	86
Average } Year ... }	51'1	1754'7	66'3	27'99	162	80

Extreme max. temp. for 20 years, 82'5 F. on June 16, 1893.

Extreme min. " " 15'5 F. on Jan. 5, 1894.

Longest frost, from Jan. 26 to Feb. 20, 1895, when it froze every night. During the four days, Feb. 5 to 8, the temperature remained below freezing point during the whole of each day.

Driest year, 1887, with 23'7 inches of rain.

Wettest year, 1903, with 37'7 inches of rain.

Greatest number of rainy days, 198 in 1903.

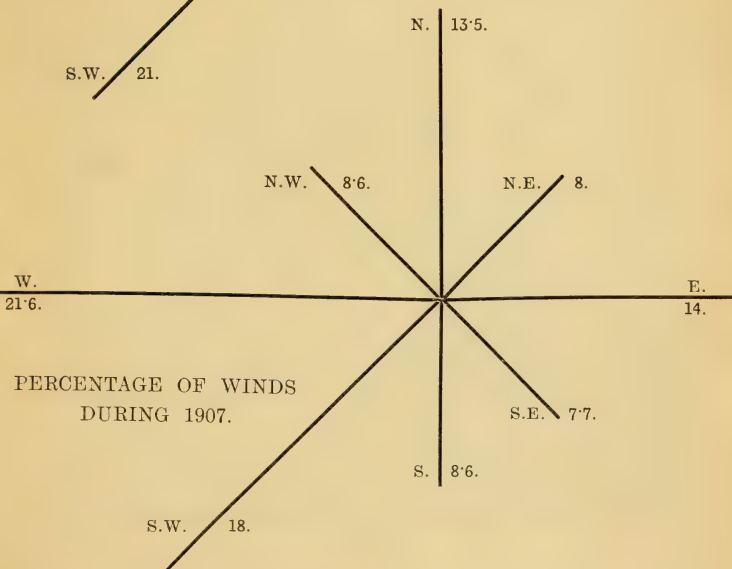
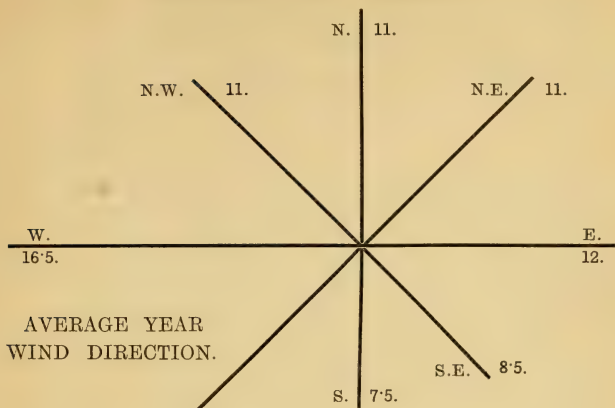
Smallest " " 127 in 1899.

Greatest rainfall in one month, 8'06in., Oct. 1889.

Smallest " " '01in., Feb. 1891.

Greatest rainfall in one day, 2'17in. on Sept. 4, 1903.

WIND-ROSE FOR VENTNOR



METEOROLOGY (continued).

BY THE EDITOR.

FOR the purposes of comparison with recent Meteorological observations, and to enable those interested in our Island weather to obtain a more extended view of the work which has been done in the past, I will give some of the more interesting facts arrived at by Dr. Martin in the course of his 10 years' study of the climate of the Undercliff during the years 1839-48, and published in "The Undercliff of the I. of W.," 1849. Also figures relating to the rainfall at Osborne at a later period, and at St. Lawrence for the 20 years preceding the two decades dealt with by Miss Gibson. For these statistics I am indebted to "The Geology of the I. of W.," 1889.

Dr. Martin ascertained that the mean temperature for the year at Ventnor, based on observations made during the 10 years, 1839-48, was $51^{\circ}72'$, which is rather higher than the mean arrived at by Miss Gibson. This may be due, wholly or in part, to the difference in the screens used.

The mean temperature of the seasons was as follows: Winter, $41^{\circ}80'$; Spring, $49^{\circ}82'$; Summer, $61^{\circ}31'$; Autumn, $53^{\circ}95'$. February was the coldest month, and August the hottest, the range of mean temperature between them being $21^{\circ}35'$. The highest temperature registered during the 10 years was 88° on Aug. 16th, 1842; and the lowest, 20° , on Feb. 3, 1841—extreme range, 68° .

For the sake of comparison, Martin refers to a decade of observations made near London, earlier in the century, when the maximum temperature of 96° was recorded on July 13, 1808; and the minimum, minus 5° , on Feb. 10, 1816—showing a range of 101° .

The lowest temperature registered in the Undercliff, of which Martin had any knowledge, was 18° , on Feb. 3, 1830.

An interesting comparison was made as to the difference of the mean daily range of temperature between the Undercliff and Newport in the various months of the year, with the following result*: Jan. U. 7° , N. 9° ; Feb. U. 8° , N. 10° ; March, U. 10° , N. 14° ; April, U. 13° , N. 20° ; May, U. 13° , N. 19° ; June, U. 12° , N. 21° ; July, U. 11° , N. 17° ; Aug. U. 11° , N. 18° ; Sept. U. 11° , N. 16° ; Oct. U. 10° , N. 14° ; Nov. U. 8° , N. 11° ; Dec. U. 7° , N. 9° .

The maximum height of the Barometer during the period in question was $30^{\circ}56'$ inches, and the minimum $28^{\circ}40'$ —showing a range of $2^{\circ}16'$ inches.

* The nearest whole numbers are given, fractions of a degree being disregarded.

As to the Rainfall, the decade produced one very dry, and one exceptionally wet year, as will be seen from the following figures: 1839—32'89in.; 1840—20'71in.; 1841—26'68in.; 1842—18'97in.; 1843—26'94in.; 1844—23'38in.; 1845—21'49in.; 1846—30'48in.; 1847—20'65in.; 1848—39'38in. The mean annual fall for the period was 25'94 inches.

Heavy rain fell on Aug. 23, 1843, 2'24 inches being measured at Ventnor, and 2'80 at Newport.

In the Geological Memoir the following figures are given for Osborne, the observer being Mr. J. R. Mann: For the period from 1858 to 1887 the mean annual rainfall was 29'21 inches; the wettest year being 1872, with 39'38 inches, and the driest, 1870, with 21'96 inches.

The observer at St. Lawrence (Rev. C. Malden) records for the years 1866 to 1885 a mean annual rainfall of 30'58 inches; the wettest year being 1872, with 39'95 inches, and the driest, 1870, with 21'99 inches.

It occurred to me some time ago to make some calculations in regard to the amount of rain which falls annually in the Island. It is by no means a wet district, the rainfall being below the average for the British Isles, but if we take a year in which, say, 30 inches falls, which is only slightly above the average, the result, in bulk and weight, is astonishing.

Water is heavy, for an inch spread over an acre of ground weighs fully 100 tons, and if we multiply this inch by 30 we get the respectable figure of 3000 tons which must fall upon an acre in the course of a year. The Island extends to nearly 100,000 acres, if we include the foreshores, so it is evident that we must often get, in this small area, a fall of 300,000,000 tons of rain in the year—not infrequently, indeed, a great deal more.

These figures suggest other thoughts, and by a simple calculation we find that the area of the Island is sufficiently great to give standing room to the whole population of the World, which we may assume to be about 1,500,000,000. This statement, though it may seem surprising, can easily be verified, for it is only necessary to multiply the number of square feet in an acre—43560—by the number of acres to a square mile—640, and again by 145—the number of square miles in the Island, exclusive of seashores and rivers, and halve the result, and we get 2,021,184,000 spaces of two square feet, which would give ample standing-room to the whole human race and still leave many square miles unoccupied.

Another interesting calculation which will help us to realize the vast amount of rain which falls upon the Earth's surface is suggested by considering how far the 300,000,000 tons, or thereabouts, of rain-water which falls annually in the Island would go to supply the

needs of the 1,500,000,000 persons we are imagining have assembled on its surface. Here, again, the answer to our inquiry is surprising, for a simple calculation shows us that the amount of water due to each person would be one-fifth of a ton—448lb.—for the year, or about a pint for each day he might choose to remain with us.

One of the most important results of rainfall is the influence it exerts in denuding the surface of the land and reducing the level of the hills. Its operations are almost imperceptible at the time, but being continued for countless thousands of years the consequences eventually resulting are most impressive.

To illustrate this I have made a few calculations. It may be assumed that about a third of the annual rainfall of the Island finds its way to the sea; the other two-thirds evaporating, soaking in, or being absorbed by the vegetation. The amount we have to consider then is 100,000,000 tons, and the question naturally arises: how much solid matter, in solution and suspension, does this water carry with it.

It has been estimated that a really muddy river, such as the Tiber, carries with it about 450 parts of solid matter to 100,000 parts of water, whereas a clear river, like the Thames, only carries 3 parts to 100,000. Now if we regard our local streams as being equal in clearness to the Thames, and carrying but three parts of solid matter in the 100,000 to the sea, we arrive at the sum of 3000 tons as the annual loss by denudation of soil from our little Island, and this is exclusive of the large amount of material which is continuously being washed down from the hills and redeposited in the valleys, and of marine action which is constantly wearing away our cliffs.

That we may realize these figures more fully, let us go back to the beginning of historical times in the Island—say 2000 years—and we shall find, if these figures are approximately correct, that the I. of W. has lost during this period, by denudation alone, the respectable sum of 6,000,000 tons of its soil.* By a further stretch of imagination we may picture to ourselves 6000 ships being chartered to carry this débris away—a long procession sailing for days through the Solent, each carrying its cargo of a thousand tons: yet 2000 years, geologically speaking, is but as a day.

* These figures are simply given as an illustration of the importance of rainfall in moulding the earth's surface, and it may, I think, be fairly assumed that they are under rather than over the mark. When we consider that above the Lower Greensand, which underlies the Plateau Gravel on St. George's Down, there once lay a series of formations rising to a height of 3000 feet or more, and that this vast mass has all been denuded away in comparatively "modern" times, we have either to readjust our ideas as to geological time, or conclude that the operations of Nature in this phase of her work were much more rapid than they are at the present day. The removal of 3000 tons a year would certainly have been far too insignificant an amount to have effected so vast a change, unless we are prepared to allow a length of time for its accomplishment which for various reasons it would scarcely be possible to do.

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